NETVIO

Netvio JP4-60-DNT Series Dante AV-A Configuration Guide

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Introduction

This document describes the configuration needed to successfully utilise Netvio IP-JP4-60-DNT Series Audio and Video over IP solutions in Dante AV-A environments, where all audio, video, and ancillary (IR & RS-232) endpoints are routed through Dante software and drivers.

If you intend to use your JP4-60-DNT components in a Netvio system using a Netvio IP-JP4-CL-10 and Netvio IP series switch, do not use this guide and instead refer to the Netvio JP4 AVoIP User Guide available from Netvio.co.uk. The Netvio IP-JP4-CL-10 and IP series switches are not required or compatible with Dante AV-A managed installations.

About Dante AV-A

Dante AV is a family of hardware and software solutions that allow manufacturers and end users to add networked video to the industry leading Dante platform. It guarantees interoperability between manufacturers while keeping discovery, configuration, and control to a single platform for all audio and video devices. With Dante management solutions all endpoints can be secured with user access control, actively monitored, and remotely accessed to simplify system maintenance and support. All Dante AV solutions provide independent video, audio and control signal routing so signals only get sent where they need to go. Dante AV solutions are compatible with the thousands of Dante enabled products on the market today.

Dante AV-A delivers high-quality video up to 4Kp60 4:4:4 resolution and 2 channels of Dante audio that are instantly compatible with Dante audio devices simplifying distributed AV system design. Independently routable audio and video flows means breaking out audio to installed DSPs, amps, or speakers is done with a single click. Its ultra-low video latency looks and feels natural for in room video distribution. As part of the Dante AV family of solutions, the familiar Dante Controller software handles all audio and video device routing while Dante Domain Manager provides IT-level management including continuous system monitoring, audit logs, and user access control.

About Netvio JP4-60 Series AVoIP

The latest 4K60 4:4:4 solution by Netvio provides the ultimate viewing experience ideal for todays larger screen formats or close content viewing applications. Delivering pixel-for-pixel quality, JP4-60 adds faster switching, lower latency and smoother synchronized switching. Netvio excels in networked AV, pioneering multi-stream video encoding to outpace industry norms. Its multi-stream AVoIP solutions flawlessly deliver 4K60 content over a standard 1Gb network, ensuring ultra-low latency and genlock synchronization among displays.

Introducing an innovative additional feature, Netvio includes a unique 2K30 H.264 stream called ContentPlus+. This feature, utilises the Real Time Streaming Protocol (RTSP) to enable simultaneous streaming to diverse applications like digital signage, live streaming platforms, and wireless software decoding, including mobile devices via the NetvioGo AV-Control application. Netvio's solutions boast compatibility with various control systems and networking products, providing a comprehensive, versatile AV experience.

In a strategic alliance with Audinate, Netvio fully embraces the new standard in audio and video compatibility through the launch of Netvio’s JP4-60-DNT series encoders and decoders. The DNT devices ensure top-tier video quality up to 4K60 4:4:4 resolution, with independently routable audio and video flows, facilitating compatibility with installed DSPs, amplifiers, or speakers.

Before you begin

Prior to Installation

After installation the only means you will have of identifying each unit in the Netvio Configuration Tool and in Dante Software tools is by the devices MAC address. Therefore, to greatly speed up the configuration of the system it is essential to take a note of the devices MAC addresses along with where they are installed.

It is also highly recommended to label the cables that each encoder is connected to at the switch end to make it possible to identify the switch port each device is connected to. This will aid with quickly trouble shooting any issues with the switch and POE later.

Switch Configuration

Before connecting any Netvio endpoints to the network it is important the switches are configured for multicast operation. Failure to configure Multicast correctly will lead to broadcast storm that will adversely affect the performance of the network. Unlike Dante audio solutions AV-A video is not usable in unicast mode.

Switch Hardware and Configuration Requirements

- Managed L2, L2+ or L3 Gigabit Ethernet Switch
- Multicast & Internet Group Management Protocol (IGMP) Version 2 enabled
- IGMP Snooping enabled on all switches and enabled in the AVoIP VLAN
- IGMP Snooping Querier enabled on the stack or core switch
- Immediate or Fast Leave should be enabled in single switch systems
- POE power supply large enough to supply 15.4W to every endpoint simultaneously (24 port with 450W or 48 port with 900W recommended)

NOTE: Jumbo frames or increased MTU sizes are not required for JP4-60-DNT series AVoIP networks and will interfere with the timing of Dante audio synchronisation.

Multiple Switch Installations Requirements

Where more than one switch is required use switches that support:

- 10Gb or higher SFP interconnectivity between switches
- Stacking or LAG capability recommended

Recommended and supported switch manufacturers and models with full switch configuration details can be found at Netvio.co.uk or if you would like guidance or assistance to design and configure your network, please contact support@netvio.co.uk.

It is important that all switches in the network are configured correctly prior to proceeding. The use of VLANs to separate potentially conflicting components, such as multicast IP cameras as well as media streaming solutions or control processors that use unregistered multicast for discovery (eg. Sonos & Control4), should be implemented before proceeding.

Required Software

Netvio JP4-60 Configuration Tool

The JP4-60 Configuration Tool is a Windows software application used for the configuration and firmware updating of Netvio JP4-60-DNT series encoders & decoders. It can be downloaded from:

JP4-60-DNT Configuration Tool

Run the JP4-60-DNT_Config_Tool_Setup.exe and follow the onscreen instructions. Once installed on your Windows PC, the JP4-60 Configuration Tool can be used to:

- View all JP4-60 endpoints on the network and their MAC, IP and firmware details
- Configure EDID, scaling and audio options
- Update firmware
- Control AV and ancillary channel signal routing
- Factory reset endpoints

The Netvio JP4-60-DNT Configuration Tool installation package also includes the latest JP4-60-DNT firmware.

Dante Controller

Dante Controller is a software application provided by Audinate which allows users to configure and route audio and video around Dante networks. It is available for Windows and macOS and can be downloaded from:

www.getdante.com

Once you install Dante Controller on your PC or Mac and connect it to a Dante network, you can use Dante Controller to:

- View all Dante-enabled audio and video devices and their channels on the network
- View Dante-enabled device clock and network settings
- Route audio and video on these devices, and view the state of existing audio and video routes
- Route ancillary channels for AV devices
- Connect to Dante Domain Manager and control enrolled devices
- Rename device channels from numbers to names that suit you
- View network status information, including:
- Multicast bandwidth across the network
- Transmit and receive bandwidth for each device
- View device performance information, including latency statistics and packet errors

The Dante Controller installation package also installs Dante Updater and Dante Activator.

Endpoint Web Interfaces

Each endpoint can have additional configuration changes made through its on board web interface. Supported by all modern browsers capable of supporting https and HTML5 use the JP4-60-DNT Configuration Tool to find the IP addresses of your endpoints and enter the address into your browser to open the web interface.

The endpoint web interfaces can be used to configure the following functions:

- Update firmware
- Change Idle/Standby images of decoders
- Configure Video Walls
- Configure AES67
- Configure Serial/RS-232 settings
- Configure ContentPlus+ Sub Stream settings

Connection & Discovery

Device Connectivity

With the AVoIP switch correctly configured, you can proceed to connect the encoders and decoders to your AVoIP switch. At this stage it is not recommended to connect the wider LAN or router to your switch until the Firmware update process has been completed successfully.

Default Network Settings - MAC & IP Addresses

Out of the box, in the factory default state or after performing a hard reset, the JP4-60-DNT encoders and decoders are set to DHCP networking, with fail over to Auto IP (also known as Link Local or Zero Conf. addressing) if no DHCP server is available.

If a DHCP server is present the devices will take addresses in the same range, eg. 192.168.0.x, 10.0.0.x etc. If there is no DHCP server present the devices will take addresses in the range of 169.254.x.x.

It is recommended to hardwire the configuration PC to the same switch as the encoder and decoders, particularly for firmware updating. The Ethernet connection should be set to DHCP to ensure that both Netvio & Audinate software can successfully discover all endpoints.

Factory Reset

If you are not able to discover any devices during the process of following this guide, or you are simply unsure if the units you have are in the factory default state, it is highly recommended that you perform a manual factory reset by following these steps:

- Take a small screwdriver, paper clip or SIM removal tool and while the encoder or decoder is powered on, press and hold down the “RESET” button (found on the same side as the power and link lights on the front of the device).

NOTE: The Rest button is a small, clickable button, so do not apply too much pressure as if you do not feel the click you likely missed the button and should try again. Applying too much force can permanently damage the button.

- After several seconds the lights on the front will start to flash.
- Keep holding the reset button for several more seconds until the lights begin to flash even faster.
- The device is now factory resetting, please leave it powered until the power light returns to a solid red and the link light is flashing slowly. The unit is then ready to be configured.

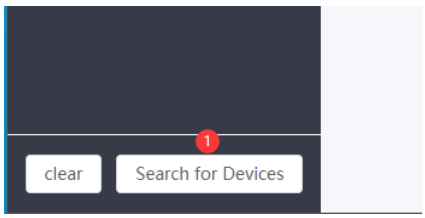
Firmware Updates

Before starting to configure your Netvio JP4-60-DNT AV-A system it is essential to update the firmware of both encoders and decoders to the latest version using the JP4-60-DNT Configuration Tool.

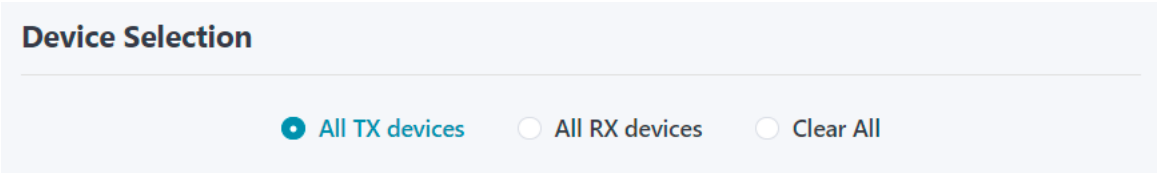
Netvio JP4-60-DNT components feature an innovative backup firmware feature that stores a second copy of the devices firmware on a second partition. This means that if a firmware update fails, it does not render the device unusable. Simply rebooting the unit will automatically start the device from the secondary partition to continue normal operation.

Before starting to update firmware, ensure that your windows machine has sufficient battery to complete the process, or is plugged in. Check that no network or power outages are planned on site. Larger system updates can take up to 20 minutes to complete.

- To start, open the Configuration Tool and press “Search for Devices” in the bottom left-hand corner.

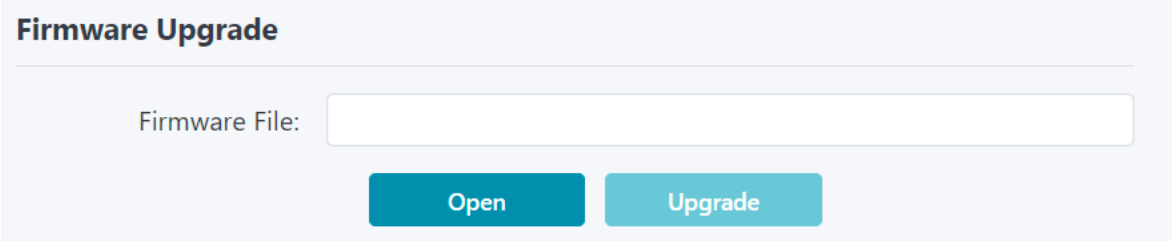


The left-hand column will populate the Device List with all online encoder and decoder endpoints. Only one device type can be selected at a time, although multiple device of either encoder or decoder can be selected simultaneously.



- Use the check boxes in the device list to select the devices you wish to update, or simply use the Device Selection buttons at the top of the Window to select all the TX or RX with a single press.

- Once the all the devices you wish to update have been selected, scroll down to the bottom of the page to the Firmware Upgrade section and Select “Open”



- Windows Explorer will open, navigate to the TX or RX firmware file and double click it to select it and load it into the Firmware File box.

- Confirm that the firmware file is the correct file for the device you have selected and select “Upgrade”.

The screen will dim and a percentage counter will appear to show how far the installation has progressed. It is highly recommended that you leave the PC alone whilst the update takes place to avoid the possibility of another application causing a problem for the laptop that could cause the update to fail.

Upon completion the devices will be restarted and the current AST Version updated to reflect the new version number just installed. You may need to Scan for all devices again for this to update.

- Repeat this process for the second device type to ensure both encoders and decoders are on the latest version.

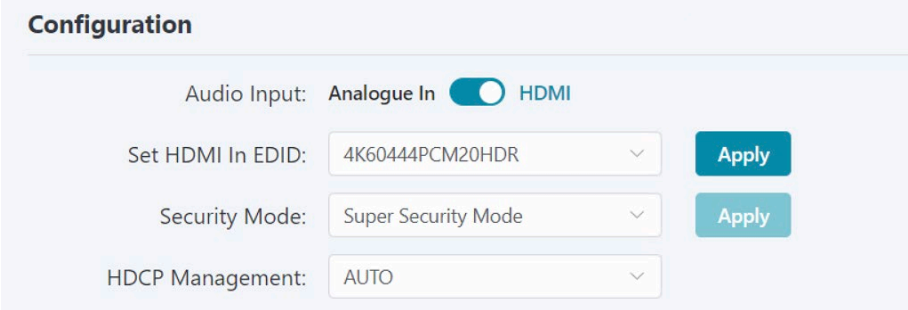
Check that all the devices you expect to be online are still present by pressing “Search for Devices” after the update process has completed. If any devices do not reappear, restart the switch/es to trigger a reboot of all devices so that they reappear. Recheck the AST version of all units to ensure that the update was successful and repeat the update process for any units that did not update successfully.

Encoder Configuration

Encoder

This section shows details about the selected encoder or encoders, including Main and ContentPlus+ Mac Addresses, hardware and firmware versions and web UI IP addresses with link to the web interfaces if enabled (see General Settings below).

Configuration



Audio Input

By default, the encoder will use the audio from the HDMI input to embed onto the AVoIP stream and Dante audio. However, if you wish to embed an analogue audio feed onto the HDMI AVoIP and Dante audio, for example when using a DVI or VGA to HDMI device, use the Audio Input switch to toggle to the Analogue Audio option.

HDMI EDID

JP4-60-DNT encoders can mimic any type of display capability by loading a specific EDID from the drop-down list in the Configuration section. Selecting the right EDID is essential to eliminate video and audio quality or drop out problems.

As a rule, it is best to start by selecting an EDID that matches the format of the source device connected to the encoder and for Dante systems only use PCM 2.0 channel audio. If the source is a 1080p device, choose a 2K604442.0PCM. That said, it is

essential to test each source on each display type to ensure the picture and audio is compatible with the selected EDID.

To choose a suitable EDID:

- Simply select all the encoders you wish to configure and then choose the desired resolution, refresh rate, chroma and audio format from the drop-down list and select Apply.

It is highly recommended to use stereo EDIDs on Dante audio systems.

Security Mode

The security mode of endpoints can be switch between Standard or Super depending on the level of security and command encryption required on the system. Super mode is enabled by default and is recommended.

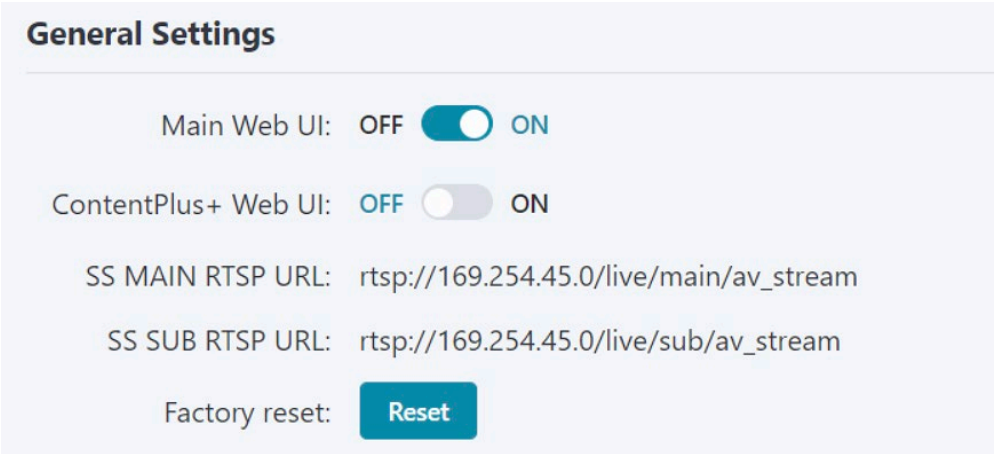
If you are integrating Netvio JP4-60-DNT endpoints with another brand of AV-A it may be necessary to change to Standard mode for compatibility since all endpoints need to run in the same mode for interoperability. Otherwise leave the setting on super security mode.

HDCP Management

Like the EDID management function, it is possible for the encoder to mimic the HDCP format of different sink devices by choosing between HDCP 1.4, 2.2 or No Support using the HDCP Management setting.

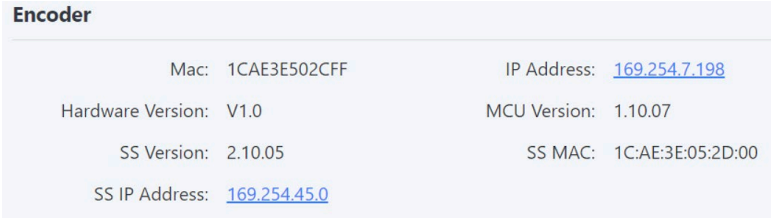
The default setting is Auto and is recommended however if you are using the HDMI through port of the encoder to send HDMI to devices that do not support HDCP, such as some teleconferencing solutions or commercial displays using the No Support option is recommended.

General Settings



Encoder Web User Interfaces

There are some options that are only available from the build in web UI's of the AV-A and ContentPlus+ encoders, note these are separate web interfaces. By default, these interfaces are disabled to save processing overhead on the device, but they can be enabled and disabled as required using the toggle switches.



The web interfaces can be accessed by clicking the IP addresses in the Encoder section above. With IP address linking to the main web UI and SS IP address linking to the ContentPlus+ section.

ContentPlus+ Main & Sub RTSP URL

ContentPlus+ produces two RTSP streams:

- The Main stream URL is configured to RTSP, H.264, 1080p, 30fps, 4Mbps, CBR with stereo audio
- The Sub stream URL is configured to RTSP, H.264, 720p, 10fps, 1Mbps, CBR with no audio

The Main stream is recommended for consuming content on displays or sharing with third party hardware or apps, whilst the sub stream is ideal for use in graphical user interfaces.

Factory Reset

The Reset button will return the unit to its factory default state for all settings.

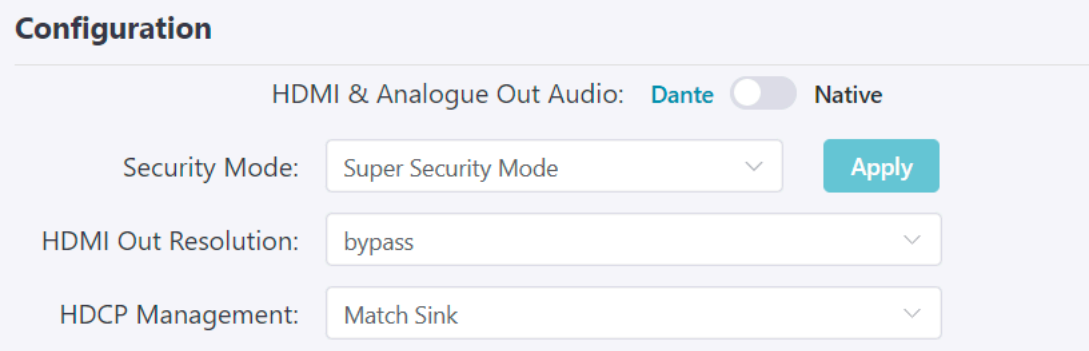
Decoder Configuration

Decoder

This section shows details about the selected decoder or decoders, including MAC Address, hardware and firmware versions and web UI IP addresses with a link to the

web interface if a single device is selected. Note that the web UI must be enabled for the link to function (see General Settings below).

Configuration



HDMI & Analogue Out Audio

The Netvio IP-JP4-60-RX-10 HDMI and Analogue audio outputs can be set to either decode audio from the Dante input, or from the audio embedded in the AVoIP video stream. Set here which you wish to decode.

Security Mode

The security mode of endpoints can be switch between Standard or Super depending on the level of security and command encryption required on the system. Super mode is enabled by default and is recommended.

If you are integrating Netvio JP4-60-DNT endpoints with another brand of AV-A it may be necessary to change to Standard mode for compatibility since all endpoints need to run in the same mode for interoperability. Otherwise leave the setting on super security mode.

HDMI Out Resolution

If you are using a mix or display resolutions in your installations it is important to correctly configure the decoders HDMI output to a resolution supported by your display or else a blank screen or error message may appear on the display.

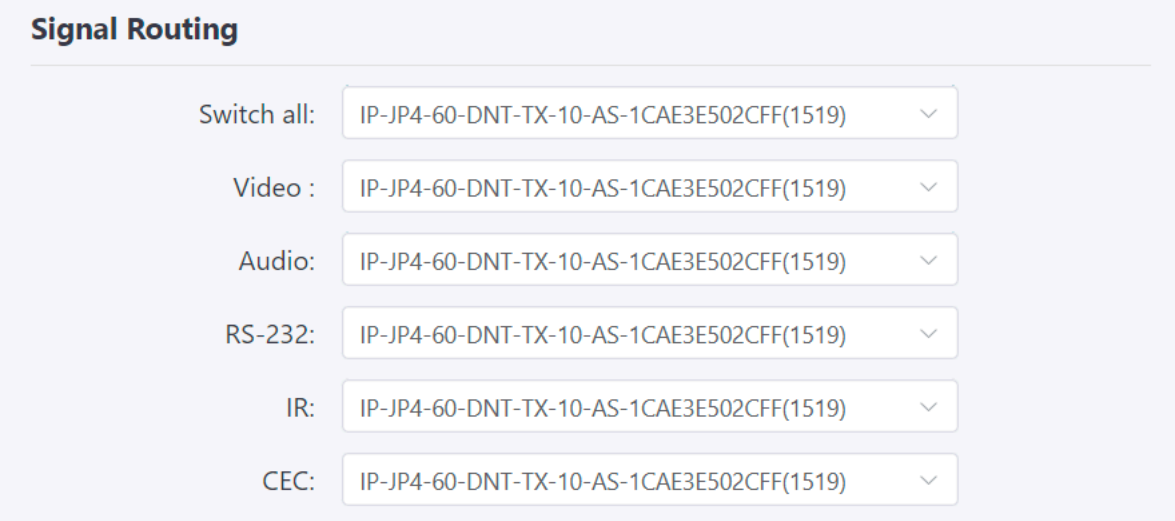
By default, the decoder with bypass the scaler and passthrough the native resolution of the source, this will often give the best picture quality as both resolution and framerate are perfectly matched between the source and display. However, if there are 4K UHD sources in use with 1080P displays, it is important to lower the resolution to a suitable value here.

HDCP Management

The Netvio IP-JP4-60-DNT-RX-10 can manipulate the HDCP version of the HDMI output. By default it will passthrough the same HDCP version as present on the source, however, if using an older 1080p display with the RX's scaler enabled it is important to ensure the HDCP version is limited to HDCP 1.4 (1P4) to ensure compatibility.

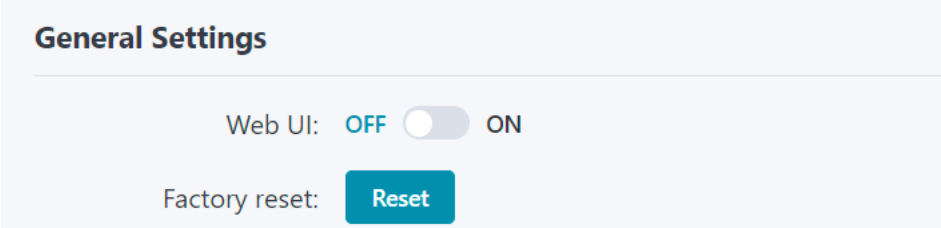
If HDCP problems are seen, enable Extended Compatibility Mode.

Signal Routing



To enable the testing of signal routing, use the drop down lists to select the encoder you wish to route the signal from.

General Settings



Web UI

Enable and disable the decoders web UI.

Factory Reset

The Reset button will return the unit to its factory default state for all settings.