Surround Sound Setup Guide for NUC

This guide will show the recommend method to setup surround sound through bitstreaming. Bitstreaming is the process whereby the NUC sends an un-encoded digital signal to an A/V receiver, to which the receiver will decode the signal, not the NUC, and often produces better quality sound, depending on the receiver.

What is Needed:

- AV Receiver with HDMI or TOSLINK (SPDIF), if using optical audio
- Surround speakers (5.1 or 7.1)
- 2 HDMI cables or a TOSLINK cable (a mini DisplayPort to HDMI cable can also be used from the NUC to the Receiver)
- HDMI display, keyboard, mouse
- NUC running Windows*
- Media Player Classic* (https://mpc-hc.org/)
- 1. Download and install the latest Intel® graphics drivers (https://downloadcenter.intel.com/)
- 2. Connect the HDMI or mini DisplayPort cable from the NUC to an HDMI input of the AV receiver. If using TOSLINK on the NUC, connect the NUC's TOSLINK output to a TOSLINK input on the receiver.
- 3. Start Windows* and download and install Media Player Classic* (MPC-HC) (http://mpc-hc.org/downloads/)
- 4. Open MPC-HC. On the Menu bar, click **View**, then **Options**.
- 5. On the left side menu tree, click on Internal Filters, then click on Video Decoder (on the bottom of the screen).
- 6. It's suggested that Hardware Acceleration be used, especially if 4K content is played, choose a **Hardware Acceleration** option, then click OK.

7. If 4K or HEVC (h.265) content is going to be played, also select, **HEVC**, and **UHD (4K)**.

Properties	×
Video Settings	
Settings Threads for Multi-Threading Auto Settings for Deinterlacing Applies to Hardware +Software +Renderer Deinterlacing	Hardware Acceleration Hardware Decoder to use: DXVA2 (native)
Field Order Deinterlacing Mode	☑H.264 ☑VC-1 ☑SD
Auto 🗸	
Output Formats	
8-bit 10-bit 16-bit 4:2:0 ✓ NV12 ✓ P010 ✓ P016 4:2:2 ✓ YUY2 ✓ UYVY ✓ P210 ✓ v210 ✓ P216 4:4:4 ✓ YV24 ▲ AYUV ✓ Y410 ✓ v410 ✓ Y416 RGB ✓ RGB32 ✓ RGB24 □ RGB48	Hardware/GPU Deinterlacing (CUVID/QS only) Enable Adaptive HW Deinterlacing Output Mode 25p/30p (Film) Filph-Quality Processing
RGB Output levels (for YUV -> RGB conversion) O TV (16-235) O PC (0-255) O Untouched (as input) Dithering Mode Ordered Dithering Random Dithering	Software Deinterlacing (YADIF) Enable YADIF Deinterlacing Output Mode 25p/30p (Film) 50p/60p (Video)
Enable System Tray Icon	LAV Video Decoder 0.66.0
	OK Cancel Apply

8. Click Audio Decoder and select the formats that the receiver supports. For the high quality uncompressed formats to work (if the receiver supports them) Dolby **TrueHD** and **DTS-HD** need to be selected. Click OK, and then OK again to leave the settings.

Properties	×
Audio Settings Mixing	
Dynamic Range Compression Apply DRC on formats that support it (AC3, EA Level: Bitstreaming (S/PDIF, HDMI) Formats Delive Dicticl (AC a)	C3) Audio Delay C3) Enable Audio Delay Delay (in ms): 0 ÷ Output Formats Select which output formats are available.
Dolby Digital (AC-3) Dolby Digital Plus (E-AC3) Dolby TrueHD Options Use DTS-HD Framing for all DTS types	The best format is used automatically. 16-bit Integer 24-bit Integer 32-bit Integer 32-bit Integer 32-bit Floating-point
Options Auto A/V Sync correction Convert Output to Standard Channel Layouts Expand Mono to Stereo Use Legacy 5.1 channel layout	Use Dithering for 16-bit Output Enabling all formats will allow untouched / bitexact output. Only if a format is not compatible with your hard- or software it should be disabled.
Enable System Tray Icon	LAV Audio Decoder 0.66.0
	OK Cancel Apply

NOTE: Skip to step 17 if using Toslink.w

9. Open Control Panel, click on Hardware and Sound, then click Manage Audio Devices:



10. To setup HDMI, click once on the applicable audio device then click on the **Configure** button.

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Playback	Recording	Sounds Com	munications		
Select a	playback d	evice below to	modify its s	ettings:	
	DENO Intel(R Defau	N-AVR) Display Audio It Device	b HDI	MI	
	Speak Realte Not pl	ers k High Definiti ugged in	on Audio		
	Realte Realte Ready	k Digital Outp k High Definiti	ut on Audio		
Config	gure		Set Def	ault 🔽	Properties
		O	K	Cancel	Apply

11. On the Speaker Setup window, click on the applicable version of surround (5.1 or 7.1), click Next.



12. Select the appropriate speakers, click Next

	×
📀 👅 Speaker Setup	
Customize your configuration Check the boxes below to indicate which speakers are present in your surround configuration. Optional speakers:	Sub Sub Sub Sub Sub Sub Sub Sub Sub Sub
	Click any speaker above to test it.
	Next Cancel

13. Select whether the speakers are Full Range, click Next, and then click Finish.



14. For HDMI: To get the best quality audio output, double-click the device and click on the Advanced tab. Check that the **Default Format** is set to the highest bit rate and frequency supported.

DENON-AVR Properties	Х
General Supported Formats Levels Advanced	
Default Format Select the sample rate and bit depth to be used when running in shared mode.	
24 bit, 96000 Hz (Studio Quality) Test 16 bit, 32000 Hz (FM Radio Quality) 16 bit, 44100 Hz (CD Quality) E 16 bit, 48000 Hz (DVD Quality) 16 bit, 88200 Hz (Studio Quality) 16 bit, 96000 Hz (Studio Quality) 16 bit, 96000 Hz (Studio Quality) 16 bit, 176400 Hz (Studio Quality) this device 	
16 bit, 192000 Hz (Studio Quality) 16 bit, 192000 Hz (Studio Quality) 24 bit, 44100 Hz (Studio Quality) 24 bit, 48000 Hz (Studio Quality) 24 bit, 88200 Hz (Studio Quality) 24 bit, 96000 Hz (Studio Quality)	
Restore Defaults	
OK Cancel Apply	,

15. For Toslink: Open the Control Panel, click on **Hardware and Sound**, and then click **Realtek HD Audio Manager**.



16. Select **Default Format**, and check that the **Default Format** is set to the highest bit rate and frequency supported.

📢) Realtek HD Audio Manager	- 🗆	×
Digital Output	Device advanced settings	l
Main Volume Set Default L R	ANALOG Back Panel	1
Sound Effects Default Format		
Default Format 24 Bits, 192000 Hz (Studio Quality) I6 Bits, 44100 Hz (CD Quality) I6 Bits, 48000 Hz (DVD Quality) I6 Bits, 96000 Hz (Studio Quality) I6 Bits, 192000 Hz (Studio Quality) 	Front Panel	
24 Bits, 96000 Hz (Studio Qualitý) 24 Bits, 192000 Hz (Studio Quality)	DIGITAL	
REALTEK		1 K

17. Lastly, select the appropriate device and set it as the **Default Device**.

💮 Sound	I					Х
Playback	Recording	Sounds	Communicati	ons		
Select a	playback de	evice belo	w to modify	its settings:		
	DENOI Intel(R) Ready	N-AVR Display	Audio			
	Speake Realtel	ers k High De ugged in	efinition Audi	0		
	Realtel Realtel Defaul	Realtek Digital Output Realtek High Definition Audio Default Device				
Confi	gure		Set	Default	Properties	
			OK	Cancel	Apply	

18. Change the AV Receiver's input to HDMI or TOSLINK (SPDIF), and play a surround sound file in Media Player Classic.