



RAVENNA 2020 Webinar Series

Products & Applications: Virtual Sound Cards

Tue, July 28, 2020 15:00 h (CEST)

Jochen Richter & Johannes Freyberger, Lawo Maurice Engler, Merging

Andreas Hildebrand, ALC NetworX







Your Host





Andreas Hildebrand, RAVENNA Technology Evangelist

- more than 25 years in the professional audio / broadcasting industry
- graduate diploma in computer science
- R&D, project & product management experience
- member of AES67 TG and ST2110 DG

ALC NetworX GmbH, Munich / Germany

- established 2008
- R&D center
- developing & promoting RAVENNA
- Partnerships with > 40 manufacturers



ALC NetworX

RAVENNA

- IP media networking technology
- designed to meet requirements of professional audio / broadcasting applications
- open technology approach, license-free
- fully AES67-compliant (built-in)













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Welcome to Broadcast ^{3.0}

R3LAY VSC (virtual sound card) New developments - Less CPU load, new WDM driver support

Ravenna Seminar, Germany |28th of July 2020, 15:00 pm CEST



Your LAWO - Team today:





Johannes Freyberger Jochen Richter R & D, Radio / R3LAY Head of Sales (Global), Radio

Presentation Agenda:



- 1. R3LAY Virtual Sound Card Overview R3LAY Product Line
- 2. New R3LAY development CPU load optimisations
- 3. New WDM driver
- 4. Impact on Radio Remote solutions, mobile use and data center installs
- 5. Questions and Answers

The R3LAY Products



- R3LAY VSC Virtual Sound Card RAVENNA/AES67 driver for Windows.
- R3LAY VPB Virtual PatchBay Routing, soundcard control, RAVENNA/AES67 interface, VST host, processing.
- R3LAY VRX4 Virtual Radio Mixer Software. 4 faders, 1 mix bus, native processing.
- R3LAY VRX8 Virtual Radio Mixer Software. 8 faders, 2 mix buses, Automix, native processing.
- OnAir4 RAVENNA/AES67-based audio interface. Mic/lines, headphones, zero latency monitoring
- NEW: R3LAY AoIP Stream Monitor Only SW based stream monitoring of up to 16 AES 67 streams (with multiple channels)
- **NEW:** R3LAY Configurator Tool for easy config. management of R3LAY VRX consoles in a bigger network / environment
- 3rd party partner products available (eg. Orban sound processing SW (VST plugin...), e.g. Profanity Delay SW like Arse!, ...)



The new R3LAY developments:



CPU load optimisations - New R3LAY development, ready Q3/2020 New WDM driver, made by LAWO, ready now

1. CPU load optimisation



CPU load optimisations - New R3LAY development, ready Q3/2020 What does that mean in practise:

- Customers can install R3LAY Software on less performant PCs
- With same PC performance more channels or processes can run in parallel
- Mobile applications (Remote studios) can run on standard PCs / notebooks

2. New WDM audio driver:



New WDM audio driver, optimised by LAWO, ready now What is the impact of the new WDM driver:

- Audio Processing chain is optimised in terms of timing
- A triggered faderstart is faster now
- Buffer management is optimised maximum output on same PC / config.
- We are in the process of further optimization of the entire process chain

3. Impact on customer installs:



Positive Impact on Radio Remote solutions, mobile use + data center installs

 Especially on Radio Remote Solutions the two new developments have a positive impact. Standard notebooks are sufficient now to drive R3LAY VSC and/or R3LAY VRX4/8 software-based mixer.

• Data Center or Cloud based installations need less CPU power now on virtualized platforms and are optimised in audio processing plus timing.

More technical details now !



Now I will hand over to my colleague Johannes for further technical, detailed information of the new features:

- Less CPU load
- Optimised WDM audio driver in terms of timing
- More infos on the Windows audio mixer in general

RJLAY The RJLAY Radio in a Bag.









11:17:55 CLOCK

HP MUTE HP COUGH

TASKBAR OnAir4









Radio Workflow Overview



PRODUCTION (REMOTE)

Ruby Touch Intuitive virtual touch interface for self-op on-air radio

crystal CLEAR Virtual touch interface for mixing and routing

Compact radio mixing console

R3LAY VRX

Software based radio mixer. soundcard and AES67 drivers

Audio interface

Power Core EDGE/SAN

High density audio processing and routing. Modular I/O plus MADI and AES67

OnAir4

Audio routing engine, fixed I/O configuration plus AES67

User Interface

Crystal

rubv

PRODUCTION (ON-PREMISE)

CONTRIBUTION

Managed networks

(AES67, ST2022-7, PTP and API)

ahaha

CISCO

ARISTA

Unmanaged Networks

4/5G

WAN/Wi-Fi

Audio, sync and control data

Audio and control data

User Interface

ruby Crystal Compact radio mixing console sapphire

Modular radio mixing console

R3LAY VRX

Software based radio mixer. soundcard and AES67 drivers Virtual touch interface for mixing and routing VisTool studio applications

self-op on-air radio

crystal CLEAR

Ruby Touch

VisTool SOLO/SOLO plus control applications

Intuitive virtual touch interface for

Audio interface and processing

Power Core L/XL/MAX

High density audio processing, Modular I/O plus MADI and AFS67

Nova17

Audio processing, routing and Modular I/O, MADI and AES67

Compact Engine

Cost-effective, audio processing, routing and mixing engine, I/O options plus MADI and AES67

OnAir4 Audio routing engine, fixed I/O

R3LAY VRX

Software based radio mixer. soundcard and AES67 drivers

R3LAY VPB Software based audio patch bay with DSP, soundcard and AES67

R3LAY VSC

Virtual soundcard for AES67

DISTRIBUTION

User Interface

VisTool Customizable interface for MCR. TOC applications or support

R3LAY AoIP Stream Monitor Loudness and quality monitor application for AES67 streams

Software based audio patch bay

Audio interface, automation and

Power Core EDGE/SAN

High density audio processing and routing. Modular I/O plus MADI and AFS67

Audio processing and routing

Modular I/O, MADI and AES67

R3LAY VSC

R3LAY VPB

Nova73

Nova17

Audio processing and routing Modular I/O, MADI and AES67

Radio Remote Solutions Overview:



Impact on LAWO Radio Remote Solutions (all based on a VPN secured network connection):

- 4. Remote journalists solution: "R3LAY VRX8 bundle" (with "OnAir4") at home / remote
 - IP audio connection to a "Compact engine" (incl. Ravenna Option) at the Radio station / HQ (this solution may not require a radio automation).

This solution Nr. 4 needs two network cards (2 NICs) as we have to have a connection to the internet (VPN) on the one hand and to the OnAir4 (AES 67 / Ravenna link) from the Laptop or Home Computer on the other hand.

Radio Remote Solutions (4):



- 4. Remote journalists solution: "R3LAY VRX8 bundle" (with "OnAir4") at home / remote
 - IP audio connection to a "Compact engine" (incl. Ravenna Option) or PowerCore at the Radio station Studio/ HQ



This solution Nr. 4 needs two network cards (2 NICs) at the remote location as we have to have a connection to the internet (VPN) on the one hand and to the OnAir4 from the Notebook or Home Computer on the other hand.

* Use a test to ensure the 2 MB network performance

Please use a small network switch here for OnAir4 and PC/notebook.

Question & Answers Session:





Any questions?

We are looking forward to your inputs and happy to help.

Thank you very much!



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Merging Technologies

30 years of independence www.merging.com









TODAY's Merging Technologies virtual sound cards

CORE AUDIO IO COUNT

128 I/O @ 1fs (44.1kHz / 48kHz)
128 I/O @ 2fs (88.2 kHz / 96kHz)
128 I/O @ 4fs (176.4 kHz / 192 kHz)

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		2.0.23370
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	48 (AES67)	
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Inputs	64	
O trates		
Outputs:	: 64 7	
Status		
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O PTP:	Locked	

certified on High Sierra, Mojave and Catalina up to 10.15.2

ASIO IO COUNT (Win 7 & 10)

- 128 I/O @ 1fs (44.1kHz / 48kHz)
- 64 I/O @ 2fs (88.2 kHz / 96kHz)
- 32 I/O @ 4fs (176.4 kHz / 192 kHz)
- 16 I/O @ 8fs (352.8 kHz / 384 kHz)











TODAY's Merging Technologies virtual sound cards

CORE AUDIO IO COUNT

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ASIO IO COUNT (Win 7 & 10) • 128 I/O @ 1fs (44.1kHz / 48kHz)

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- 32 I/O @ 4fs (176.4 kHz / 192 kHz)
- 16 I/O @ 8fs (352.8 kHz / 384 kHz)



certified on High Sierra, Mojave and Catalina up to 10.15.2

LINUX driver (ALSA) also supported









NEW Merging Audio Device (MAD)

- What is MAD ? What is changing ?









NEW Merging Audio Device (MAD)

- What is MAD ? What is changing ?
- Multi ASIO Support
- Bridging ASIO applications
- WDM (Windows Driver Model) support
- more optional features

THE NEW WIN 10 AGGREGATOR









What is changing ?

Up to today's ASIO driver

RAVENNA ASIO Panel	Merging Audio	Device				-	
Merging/Ravenna ASIO Settings v12.0.1 build 9832 Local Adapter: Broadcom NetXtreme Gigabit Ethernet (169.254.245.227)	Mode RAVENNA/AES67 Primary adapter:	● General ○ NADAC Settings Realtek USB GbE Family Controller ≠2 (169.254.248.137)	Channel Settings Inputs: Outputs: Bridge channels: ASIO Settings Master ASIO host:	24 ▼ 24 ▼ 16 ▼ Merging Audio Device	44.1/48k 88.2/ 24 12 24 12 16 8	6k 176.4/192k 6 6 4	c 352.8/384k/D 3 3 2
Buffer size: 96 [smpl] @ 44.1kHz/48kHz ∨ Latency: ● 6/12/48 (AES67) note: set Horus/Hapi/Anubis' latency accordingly ○ 16/32/64 Number of Channels 44.1/48k 98.2/9ck 175.4/192k 352.8/284k/bcp	Secondary adapte Latency: Network Configure	r: None ⑥ 6/12/48 (AES67) note: set Horus/Hapi/Anubis latency ○ 16/32/64 ation	 Sample rate: y accordingly Buffer size: ASIO hosts: WDM Settings 	48000 96 [smpl] @ 44. lkHz/ Mix safe mode	/48kHz		
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State: Running Apply	Driver: State: Clock:	48kHz Running IP:169.254.246.35 Sample rate: 48kHz Domain: 0 Latenc	sy: 48				Apply
	ubis 0284					versio	n: 13.0.2 build
Merging hardw	vare is ma	andatory					
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RAVENNA ASIO Panel

Status Sample Rate: 44.1kHz State: Running

Merging/Ravenna ASIO Se

 Inputs:
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 64
 32
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 8

 Outputs:
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Apply

Local Adapter: Broadcom NetXtreme Gigabit Ethernet (169.254.245.227) Buffer size: 96 [smpl] @ 44.1kHz/48kHz ~

0 16/32/64 Number of Channels

Latency: (0) 6/12/48 (AES67) note: set Horus/Hapi/Anubis' latency accordingly





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				Outputs:	24	•	24	12	6	3
				Bridge channels:	16	•	16	8	4	2
RA	VENNA/AES67 Se	ettings		ASI0 Settings						
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S	econdary adapter:	None	~	Sample rate:	48000					
La	atency:	6/12/48 (AES67)	note: set Horus/Hapi/Anubis latency accordingly	Buffer size:	96 [smpl] (@ 44. 1kH	z/48kHz			
		0 16/32/64		ASIO hosts:	Mix safe	e mode				
Net	twork Configurat	tion		WDM Settings						
	_				Enable	WDM				
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	Anubis_600284	4		Outputs:	2			•		
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S	tate:	Running								
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-		Click he	e to access MAD online documentation							Apply









	Merging Audio D	Device									_		×
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						Bridge channels:	16	•	16	8	4	2	
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			Click <u>here</u> to access	s MAD online documer	tation						version:	Apply 13.0.2 build	4108





RAVENNA ASIO Panel

Buffer size: 96 [smp] i Latency: ● 6/12/48 ○ 16/32/6 Number of Channels Inputs: 64 ♥ ■ Outputs: 64 ♥ ■ Status Sample Rate: 44. Jb/sz Running





	Merging Audio D	evice								
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				Outputs:	24 🔻	24	12	6	3	
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RAVENNA ASIO Panel

Merging/Ravenna ASIO Sett

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Local Adapter: Broadcom NetXtreme Gigabit Ethernet (169.254.245.227) Buffer size: 96 [smpl] @ 44.1kHz/48kHz v

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					Bridge channels:	16	•	16	8	4	2
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	Anubis_600284	4			Outputs:	2			•		
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RAVENNA ASIO Panel





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	Mode				Channel Settings						
		General		O NADAC				44.1/48k	88.2/96k	176.4/192k	352.8/384k/DSD
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Merging/Bayenna ASIO Settings	Secondary adapter	None		Ψ.	Sample rate:	48000					•
	Latency:	6/12/48 (AES67)	note: set l	Horus/Hapi/Anubis latency accordingly	Buffer size:	96 [smpl]	@ 44. 1kHz	/48kHz			•
Local Adapter: Broadcom NetXtreme Ggabit Ethernet (169.254.245.227) v Buffer size: 96 famcil @ 44, 18Hz/48BHz v		O 16/32/64			ASIO hosts:	Mix sa	fe mode				
Latency:	Network Configura	tion			WDM Settings						
Number of Channes 44,1/48k 88.2/96k 176.4/192k 352.8/384k/DSD Inputs: 64 × 64 32 16 8							WDM				
Outputs: 64 v * 64 32 16 8	MERCING DANUER								_		
Sample Rate: 44.194z Perf. Monitor Purping					Inputs:	2			•		
Apply					Inputs map:	Input 23-	24		•		
	Anubis_60028	4			Outputs:	2		,	•		
					Quitruite manu				_		
	Status				ouquis map.	Output 2	3-24		•		
	Driver:	48kHz									
	State:	Running									
	Clock:	IP:169.254.246.3	35 Sample rate	e: 48kHz Domain: 0 Latency: 48							
	MERC		ere to access I	MAD online documentation							Apply
										version:	13.0.2 build 410





RAVENNA ASIO Panel

Merging/Ravenna ASIO Set

Apply

Local Adapter: Broadcom NetXtreme Gigabit Ethernet (169.254.245.227) Buffer size: 96 [smpl] @ 44.1kHz/48kHz ~

0 16/32/64 Number of Channels

Status Sample Rate: 44.1kHz State: Running

Latency:
 6/12/48 (AES67) note: set Horus/Hapi/Anubis' latency accordingly

 umber of Lhannes
 44.1/48k
 88.2/96k
 176.4/192k
 352.8/384k/DSD

 Inputs:
 64
 *
 64
 32
 16
 8

 Outputs:
 64
 *
 64
 32
 16
 8





\odot	Merging	Audio	Device
	wiciging	Audio	DEVICE

	~ /
_	×

	Mode			Channel Settings					
		 General 	○ NADAC			44. 1/48k	88.2/96k	176.4/192	352.8/384k/DSD
				Inputs:	24 👻	24	12	6	3
				Outputs:	24 🔻	24	12	6	3
				Bridge channels:	16 💌	16	8	4	2
	RAVENNA/AES67 Se	ettings		ASI0 Settings					
×	Primary adapter:	Realtek USB GbE Family	y Controller #2 (169.254.248.137)	Master ASIO host:	Merging Audio De	evice			•
ings 🔺	Secondary adapter:	None	~	Sample rate:	48000				•
v12.0.1 build 9832	Latency:	6/12/48 (AES67)	note: set Horus/Hapi/Anubis latency accordingly	Buffer size:	96 [smpl] @ 44.1	kHz/48kHz			•
~		0 16/32/64		ASIO hosts:	Mix safe mode				
	Network Configurat	tion		WDM Settings					
					Enable WDM				
Perf. Monitor				Inputs:	2		•		
				Inputs map:	Input 23-24		•		
	Anubis_600284	4		Outputs:	2		•		
	Status			Outputs map:	Output 23-24		-		
	State:	Running							
	Clock:	IP:169.254.246.35	Sample rate: 48kHz Domain: 0 Latency: 48						
			to access MAD online documentation						Apply

version: 13.0.2 build 4108









- 🗆 X

MAD count

Merging Audio Device

ASIO IO COUNT

- 128 I/O @ 1fs (44.1kHz / 48kHz)
- 64 I/O @ 2fs (88.2 kHz / 96kHz)
- 32 I/O @ 4fs (176.4 kHz / 192 kHz)
- 16 I/O @ 8fs (352.8 kHz / 384 kHz)

WDM IO COUNT

• 8* I/O @ 1fs to 4fs (* could officially change)

MULTI ASIO BRIDGE IO COUNT

- 128 I/O @ 1fs (44.1kHz / 48kHz)
- 64 I/O @ 2fs (88.2 kHz / 96kHz)
- 32 I/O @ 4fs (176.4 kHz / 192 kHz)
- 16 I/O @ 8fs (352.8 kHz / 384 kHz)

Mode			Channel Settings					
	 General 				44.1/4	8k 88.2/96k	176.4/192k	352.8/384k/DSI
			Inputs:	24	• 24	12	6	3
			Outputs:	24	▼ 24	12	6	3
			Bridge channels:	16	• 16	8	4	2
AVENNA/AES67 Se	ettings		ASI0 Settings					
Primary adapter:	Realtek USB GbE Fam	ily Controller #2 (169.254.248.137)	Master ASIO host:	Merging Audio	Device			-
Secondary adapter:	None	~	Sample rate:	48000				-
Latency:	6/12/48 (AES67)	note: set Horus/Hapi/Anubis latency accordingly	Buffer size:	96 [smpl] @ 44	1. 1kHz/48kHz			-
	0 16/32/64		ASIO hosts:	Mix safe mo	de			
letwork Configurat	tion		WDM Settings					
					1			
			Inputs:	2		•		
<u>b 2000</u>	201		Inputs map:	Input 23-24		•		
Anubis_600284	1		Outputs:	2		-		
Status			Outputs map:	Output 23-24		•		
Driver:	48kHz							
State:	Running							
Clock:	IP:169.254.246.3	5 Sample rate: 48kHz Domain: 0 Latency: 48						
							1.1	ð mal s
ALORO FOR THE NETWORK	Click he	re to access MAD online documentation						мрргу

Note: The number of I/Os can be configured to less if the application does not support these numbers.









MAD optional infrastructure functionalities

Deployable in VM environments

Support of ST 2022-7

Support of NMOS IS-04 and IS-05









practical cases

- For DAW('s) users with multi ASIO (multiple audio App)
- WDM (Windows Driver Model) integration
- ST 2022-7 support perfect combination with ANUBIS SPS
- VM (Virtual Machines) support
- Broadcast remote production as combo with Anubis = no latency















REAL-TIME MEDIA

















	Merging Audio E	Device							_		×
	Mode				Channel Settings						
		 General 					44.1/48k	88.2/96k	176.4/192k	352.8/384k/(DSD
					Inputs:	24 🔹	24	12	6	3	
Merging Audio Device					Outputs:	24 🔻	24	12	6	3	
					Bridge channels:	16 💌	16	8	4	2	
	RAVENNA/AES67 Se	ettinas			ASIO Settings						
	Primary adapter:	Dealtek LISB ChE Fami	ly Controller #2 (169, 254)	049 137) ▼	Master ASIO host:	Merging Audio Devic	-				•
	Secondary adapter:	Ness	y controller #2 (105.254.	240.137)	Sample rate:	49000	~				-
	Latencu	None	natas ant Harsa Mani (An	ubia latena u accordinalu	Puffer sizes	48000					
	Latency:	0 16/32/64	note: set horus/hapi/An	ubis latericy accordingly	burler size:	96 [smpl] @ 44.1kH	z/48kHz				•
					ASIO nosts:						
	Network Configural	tion			WDM Settings						_
						Enable WDM					
					Inputs:	2		•			
	Apubic 60029	1			Inputs map:	Input 23-24		•			
	Anubis_000264	•			Outputs:	2		-			
	Status				Outputs map:	Output 23-24		•			
	Driver:	48kHz									
	State:	Running									
	Clock:	IP:169.254.246.35	5 Sample rate: 48kHz Doma	in: 0 Latency: 48							
										ter.t	
		Click her	e to access MAD online do	cumentation					version	Apply	41
									VC 31011	1 201012 Dulla	- T.A











Merging A	udio Device							×
Mode		Channel Settings						
	General O NADAC			44.1/48k	88.2/96k	176.4/192k	352.8/384k/	DSD
		Inputs:	24 💌	24	12	6	3	
Nierging Audio Device		Outputs:	24 🔻	24	12	6	3	
		Bridge channels:	16 💌	16	8	4	2	
ASIO bridae	567 Settings	ASIO Settings						
+ multi ASIO	ter: Realtek USB GbE Family Controller #2 (169.254.248.137)	Master ASIO host:	Merging Audio Devic	e				•
+ IIIuIII ASIO Secondary ad	lapter: None 🗸	Sample rate:	48000					•
+ WDM Latency:	6/12/48 (AES67) note: set Horus/Hapi/Anubis latency accordingly	Buffer size:	96 [smpl] @ 44.1kH	z/48kHz				•
+ ST 2022-7 *	0 16/32/64	ASIO hosts:	Mix safe mode					
+ VM * Network Com	îguration	WDM Settings						
			Enable WDM					
		Inputs:	2		•			
		Inputs map:	Input 23-24		•			
* OPTIONAL Anubis_c	00284	Outputs:	2		-			
Status		Outputs map:	Output 23-24		•			
Driver:	48kHz							
State:	Running							
Clock:	IP:169.254.246.35 Sample rate: 48kHz Domain: 0 Latency: 48							
A						_		
ALCO POL DE	Click here to access MAD online documentation						Apply	
						version:	13.0.2 build	4108









	Merging Audio [Device									_		X
	Mode					Channel Settings							
		General							44.1/48k	88.2/96k	176.4/192k	352.8/384k	/DSD
						Inputs:	24	•	24	12	6	3	
Nierging Audio Device						Outputs:	24	•	24	12	6	3	
						Bridge channels:	16	•	16	8	4	2	
ASIO bridge	RAVENNA/AES67 Se	ettings				ASIO Settings							
+ multi ASIO	Primary adapter:	Realtek USB GbE Fam	nily Controller #	£2 (169.254.248.137)	•	Master ASIO host:	Merging	Audio Devid	e				•
	Secondary adapter:	None			~	Sample rate:	48000						•
+ WDIVI	Latency:	6/12/48 (AES67)	note: set Ho	orus/Hapi/Anubis latency accor	rdingly	Buffer size:	96 [smpl]	@ 44.1kH:	z/48kHz				•
+ ST 2022-7 *		0 16/32/64				ASIO hosts:	Mix sa	fe mode					
+ VM *	Network Configurat	tion				WDM Settings							
+ NIMOS IS01-IS05 *							Enable	WDM					
1101031304-1303						Inputs:	2			•			
*	Anubis 60028					Inputs map:	Input 23	-24		•			
* OPTIONAL	Anabis_00028-	•				Outputs:	2			•			
	Status					Outputs map:	Output 2	3-24		•			
	Driver:	48kHz											
	State:	Running											
Comes with every	Clock:	IP:169.254.246.3	35 Sample rate:	48kHz Domain: 0 Latency: 48									
Anubis, Hapi or Horus											_		
			ere to access M/	AD online documentation								Apply	
											version:	13.0.2 bui	d 4108









	Merging Audio Device	— 🗆 X
	Mode	Channel Settings
Merging Audio Device	General O NADAC	44. 1/48k 88. 2/96k 176. 4/192k 352. 8/38 4k/DSD Inputs: 24 24 12 6 3 Outputs: 24 24 12 6 3 Bridge channels: 16 16 8 4 2
ASIO hridae	RAVENNA/AES67 Settings	ASI0 Settings
+ multi ASIO	Primary adapter: Realtek USB GbE Family Controller #2 (169.254.248.137) Secondary adapter: None	✓ Master ASIO host: Merging Audio Device ✓ Sample rate: 48000
+ WDM + ST 2022-7 *	Latency: 6/12/48 (AES67) note: set Horus/Hapi/Anubis latency accordin 16/32/64	dingly Buffer size: 96 [smpl] @ 44.1kHz/48kHz ASIO hosts: ☑ Mix safe mode
+ VM * + NMOS IS04-IS05 *		WDM Settings
* OPTIONAL	Anubis_600284	Inputs map: Input 23-24 Outputs: 2
	Status Driver: 48kHz State: Running	Outputs map: Output 23-24
Comes with every Anubis, Hapi or Horus	Clock: IP: 169.254.246.35 Sample rate: 48kHz Domain: 0 Latency: 48	
	Click here to access MAD online documentation	Apply version: 13.0.2 build 410
More info Thank you		





RAVENNA / AES67 Virtual Sound Card (RVSC)







RVSC – RAVENNA Virtual Sound Card for Windows

- Operates under Windows 7 & 8 & 10
- Supports WDM driver model
- Typ. processing latency: ~ 10 ms
- PTP HW support, requires selected Intel NICs
- AES67 / ST 2110-compatible (multicast-only)
- Free version w/ 2 playback & 1 record WDM device
- ! No commercial support
- Download at: <u>www.ravenna-network.com/resources</u>









CELEBRATING 10 YEARS

AES67 & ST 2110 built-in



Questions?











More answers...



RAVENNA / AES67 / SMPTE ST 2110 Resources:



www.ravenna-network.com/resources











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Products & Applications: Virtual Sound Cards







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