RAVENNA/AES67
Virtual Audio Device Guide

Contents

OVERVIEW

Virtual Audio Device driver

Apple's Audio Drivers (Core Audio) is a standardized audio driver system for all Macintosh computers running on Mac OS X allowing access to Core Audio compatible audio interfaces.

The Merging **Virtual Audio Device** is intended for owners of a Network Interface hardware RAVENNA or AES67 compatible who wish to work under Mac OS.
Note: as of VAD 3.2 only one VAD flavor is available (it combines Standard and Premium)

The **Virtual Audio Device will run in Premium mode automatically** for owners of at least Merging Horus, Hapi or Anubis who wish to work under Mac OS. It requires at least one Merging device to be detected over the network

The **Non-Merging Devices RAVENNA or AES67** owners will need to purchase either a **VAD standard or Premium key** to operate. Once the key has been purchased it must be entered in MLM as per the procedure below.

System Requirements

Certified MAC Operating Systems (OS) The Core Audio driver and VAD are qualified under macOS

- **Yosemite*** 10.10.x: RAVENNA -VAD (Core Audio) v2.0.31254.dmg - Not Supported with v2.1.x
- **El Capitan*** 10.11.x: RAVENNA -VAD (Core Audio) v2.0.31254.dmg - Not Supported with v2.1.x
- **Sierra*** 10.12.x: RAVENNA -VAD (Core Audio) v2.0.31254.dmg - Not Supported with v2.1.x
- **High Sierra*** 10.13.x: RAVENNA -VAD (Core Audio) v2.1.45186 - Not Supported with v3.X
- **Mojave *** 10.14.x: RAVENNA -VAD (Core Audio) v2.1.45186 - Not Supported with v3.X
- **Catalina *** 10.15.1 to 10.15.6: RAVENNA -VAD (Core Audio) v2.1.45186 – VAD 3.X Recommended
- **Big Sur** (Mac Intel & M1) 11.1 to 11.6: RAVENNA -VAD (Core Audio) v3.0.47300 dmg and higher
- **Monterey** (Mac Intel & M1) 12.x: RAVENNA -VAD (Core Audio) v3.2.0.50810 dmg and higher
- **Ventura** Certification in progress, known to have multiple notifications dialogs.

**Legacy macOS no longer officially supported by Apple nor Merging. Works as is.*

Warning: Users updating to Horus-Hapi firmware v3.9.4 and above must install VAD 2.0.39648 and higher.

Warning: 10Gb Ethernet Adaptors are not certified for VAD usage.

*Warning**:** Apple support of USB has performance weakness, if running recent macOS and/or on M1/Silicon family. Merging highly recommends that you use a Thunderbolt adaptor as the one below*
https://www.sonnettech.com/product/thunderbolt-avb-adapter/overview.html

Merging MacOS Configuration Guides
https://merging.atlassian.net/wiki/spaces/PUBLICDOC/pages/4820445/Mac+Configuration+Guide

Virtual Audio Device

As of the VAD v3.2 only one VAD version is distributed and can run in different modes.

Important: A new Merging License Manager (MLM) is included into the VAD as of version 3.2, more details on the MLM can be found *here*. The license manager will allow the VAD users without a Merging interface to activate the VAD Standard or Premium mode once a key has been received.

VAD Standard operations:

• Runs with Non-Merging interfaces RAVENNA or AES67 compatible, requires a Key as of v3.2

• The latency can be set to 1ms (48-AES67), 4ms (192), 6ms (288), 10ms (480)

Note: effective latency depends on Application buffer size

• The driver can be used as default device and System (alert) device.

• Mac Parental Controls and Security Firewall should be switched OFF

• Numbers of inputs and outputs available • 1fs (44.1kHz / 48kHz) = 64 I/O

Note: The number of I/Os could be less if the application does not support these numbers

• Refer to the **Configure Merging and AES67 devices guide** for more details

https://www.merging.com/support/downloads#macOS

This guide is installed along with your **Virtual Audio Device** driver

Important: As of the VAD v3.2 a key is required for standard operations

The VAD can also be running in Premium mode, with a VAD Premium key purchase.

VAD Premium operations:

• Requires at least one Merging Network Interface (Horus, Hapi or Anubis) on your network

• Operates with Non-Merging interfaces. Requires a VAD Premium key to unlock premium mode

• The latency can be set to 16, 32, 48 (AES 67), 64, 128, 192, 288 and 480 samples

• The driver can be used as default device and System (alert) device.

• Mac Parental Controls and Security Firewall should be switched OFF refer to our configuration guides for all details

https://merging.atlassian.net/wiki/spaces/PUBLICDOC/pages/4820445/Mac+Configuration+Guide

• Numbers of inputs and outputs available 128 I/O at all sampling rates

Note: The number of I/Os could be less if the application does not support these numbers

Warning: If you encounter issues such as glitches, reduce the IO count, since Performance is dependent on system Performance & Configuration

• Users can use UNITE or ANEMAN installed along with their RAVENNA/AES67 Interface & Driver to perform their IO connections. Refer to the User Manuals, installed along the VAD under *Applications>Merging Technologies>Docs*

• Anubis is supported as of VAD 2.0.39648 and higher

RAVENNA/AES67 Virtual Audio Device Specifications:

Driver	RAVENNA/AES67[1] Virtual Audio Device v3.2 and above	
	STANDARD mode	**PREMIUM mode**
Requirements	AES67 compatible device with VAD Standard or Premium Key	Requires at least one Merging Network Interface connected over the network (e.g. Horus, Hapi or Anubis)
Operating System macOS	Catalina 10.15.X* - Big Sur 11.7 * - Monterey 12.6 **	
Latency	1ms (48-AES67), 4ms (192), 6ms (288), 10ms (480)	16 - 32 - 48 (AES67) - 64 -128 - 192 - 288 - 480 samples
Sampling rate supported	44.1/48kHz	44.1/48kHz, 88.2/96kHz, 176.4/192kHz, 352.8kHz(DXD), 384kHz, DSD64, DSD128, DSD256
I/O @ 44.1/48kHz	64 Inputs and Outputs[2]	128 Inputs and Outputs[2]
I/O @ 88.2/96kHz	Not Available	128 Inputs and Outputs[2]
I/O @ 176.4/192kHz	Not Available	128 Inputs and Outputs[2]
I/O @ 352.8/384kHz/DSD	Not Available	128 Inputs and Outputs[2]
MIDI Pre Amps	MIDI Preamps & Din support	MIDI Pre Amps & Din support
Bundled application	MT Discovery	MT Discovery
Important: As of VAD 3.2 only one VAD is available, users with none-Merging interfaces will require a VAD Standard key to operate and can upgrade to a VAD Premium key on our Online Shop		
Merging License Manager (MLM) is included into the VAD as of version 3.2		
[1] SAP implemented in device so no need for a RAVENNA-2-SAP (SIP is not supported)		
[2] The I/O performance will vary with the system configuration.		
Yosemite, ElCapitan and Sierra are LEGACY. Not supported anymore by Apple nor Merging. Works as is. Older VAD do not support MERGING+ANUBIS		
High Sierra and Mojave 10.14.X are supported with VAD v2.1.45186 (not supported with VAD 3.0)		
*Catalina 10.15.X and Big Sur 11.X are supported with VAD PREMIUM 3.2.0 and higher on Intel and M1 (ARM/Silicon) Mac - Refer to the VAD User Guide for M1 installation		
** Monterey 12.3 is supported with VAD PREMIUM 3.2.0 and higher on Intel and M1 (ARM/Silicon) Mac - Refer to the VAD User Guide for M1 installation		
MERGING+ANUBIS is supported as of VAD version 2.0.37039.dmg and higher		
ANEMAN is installed along the VAD and can be download for older VAD version https://www.merging.com/support/downloads#aneman		
Warning: Recent Mac come with a 10Gb ethernet interface that is not support by RAVENNA today. Using an external adaptor USB-C to ETH is recommeded in such case		

VAD Operation example
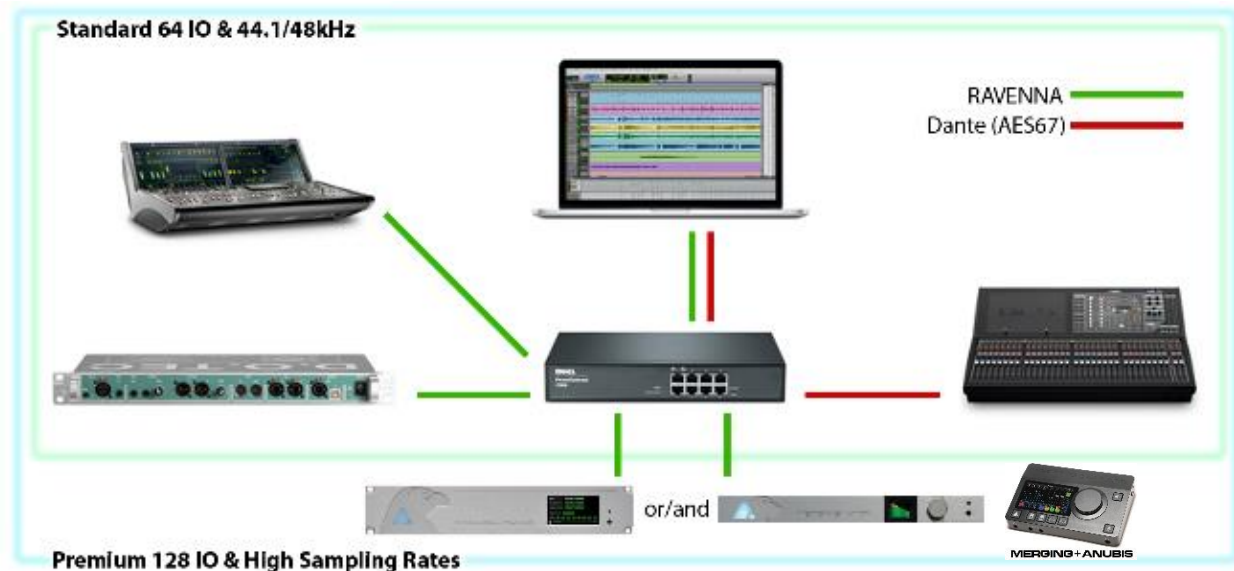
Merging Virtual Audio Device − Release Notes

Important: VAD 3.2 is supported on macOS Catalina & Big Sur & Monterey.
Users on previous OS must remain on legacy VAD 2.1

VAD version 3.2.3 b54098 − Release Date: 19.01.2023

- Fixed. Merging Licence Manager VAD keys Activation Failure

VAD version 3.2.2 b53376− Release Date: 20.10.2022

- New. macOS Monterey 12.6 certified*
- New. macOS Silicon M2 certified*
   Follow the macOS configuration guidelines
- Improvement. Support odd ports for RTP input for Horus/Hapi (ZMAN-347)
- Fixed. UNITE only outputs modules on Horus and Hapi will disconnect
- Fixed. SDP DUP bug when IF name has a space (RAV-1643)
- Fixed. Initialization potential timeout removed (RAV-1621)
- Fixed. VAD Overlapping error when connecting speakers layout above 8 channels (RAV-1620)
- Fixed. On macOS randomly cannot open the Web Browers pages from the VAD
- Fixed. VAD without a Merging devices could start up always in UNITE tab
- Debug Tools. VAD: increased Perfmon debug view to show up to 5.5ms

VAD version 3.2.1− Release Date: 2.06.2022

- New. Possibility to Unite or connect in ANEMAN the Anubis Post-FX Physical Inputs and/or Peered Post-FX inputs in order to record those when running the Music Mission.
   This includes the EQ, Dynamics and upcoming Deesser plugin option.
   Users can record the Physical Input Direct signal and/or the Post-FX signal (post-effect), independently or simultaneously.
   Note: Reverb, the Parallel Dynamics and Sends are not in the Strip signal Effect path. In order to record those, it is recommended to record the Bus returns.

- Improvement. VAD Uninstall_All removing left over files
- Improvement. PTP conflicts with AVID NEXIS
- Fixed. VAD potential assert when a device was disconnected
- Fixed. VAD no sound outputted if the Input channel count was set to 0
- Fixed. VAD changing the latency in the panel could mute the Audio

Known issue:
Update: Apple's recent support of USB has performance weakness that could result in sound dropouts and/or device going offline. If running recent macOS and/or on M1/Silicon family Merging highly recommends that you rather use a Thunderbolt adaptor as below
https://www.sonnettech.com/product/thunderbolt-avb-adapter/overview.html

VAD version 3.2.0– Release Date: 24.02.2022

- Official. Big Sur 11.6.x Officially supported (*)
- Official. Monterey 12.0.x Officially supported (*)
  Warning some DAW and applications are not yet supported on macOS Monterey
- New. One VAD for all, no longer have a Premieum edition
- VAD can be unlocked with a new MLM key (Standard and Premium) without the need of Merging device on the network, check Merging License Manager (MLM) for more details https://merging.atlassian.net/wiki/spaces/PUBLICDOC/pages/4820305/Merging+License+Manager+MLM+.
- New. VAD lock settings option
- New. VAD driver ON – OFF setting
- New. Anubis Remote Control support method with a separate installer included into the Anubis Toolkit along with the firmware.
- New. Anubis Remote Control now supports Static Discovery Support
- Fixed. VAD startup issue (kext)Kon recent macOS
- Fixed. VAD offset in record (in safe mode)

VAD version 3.0.4– Release Date: 12.10.2021

- VAD startup potential issue.
- Big Sur 11.6 Officially supported (*)

VAD version 3.0.3– Release Date: 28.09.2021

- RAV-1452: Fixed stream connection issue between Device (Anubis, Hapi, Horus) and VAD, randomly the connection could not be established

(*) Known issue:
On some rare VAD installation the VAD panel entries remain greyed out. The temporary solution is to open a Terminal command in the Mac and to enter the line below.
sudo kextload /Library/Extensions/MergingRAVENNAAudioDriver.kext
Follow by your password. This will force start the VAD until the next reboot.
Merging has contacted Apple about this issue on their macOS side.

VAD version 3.0.2– Release Date: 02.07.2021

- Fixed. Peering stability
- Fixed. UNITE stability
- Fixed. Devices not following the sampling rates changes despite in Auto Samping Rate Mode
- Fixed. Anubis not following the sampling rates changes with VAD. while in Auto Mode
- Fixed. Restarting the VAD system breaks the UNITE connections
- Improvement. Remote Control, more reliability
- Improvement. MacOS Big Sur 11.4 Support

VAD version 3.0.1– Release Date: 08.06.2021

- Fixed. ProTools PreAmps support mapping starts from port channel #1
- Fixed. Some Devices were not visible due to device renaming

- Fixed. Unite stream names too long
- RAV-1396: Fixed. Ghost streams remaining in advanced pages
- Improvement. UNITE support

VAD version 3.0.0 – Release Date: 20.05.2021

- VAD 3.0 Deployment version to end users
- Catalina and Big Sur (Intel & M1 support)
- UNITE Support

Installing the Merging Virtual Audio Device

Prerequisites

The Merging **Virtual Audio Device** driver can be installed as a stand-alone driver, at least one Network hardware RAVENNA or AES67 compatible is required for the Driver to be operational.

OS

Refer to the System Requirements above

WARNING: **Apple M1 and M2** systems requires additional steps in the installation procedure. Refer to the M1-M2 installation notice.

Procedure (Mac Intel)

1. Download the Merging **Virtual Audio Device** Installer for MAC.
http://www.merging.com/products/networked-audio/downloads

2. Open the Merging_RAVENNA_AES67_VAD_Installer.PKG file and mouse click on it

3. Click on Continue to proceed with the installation.
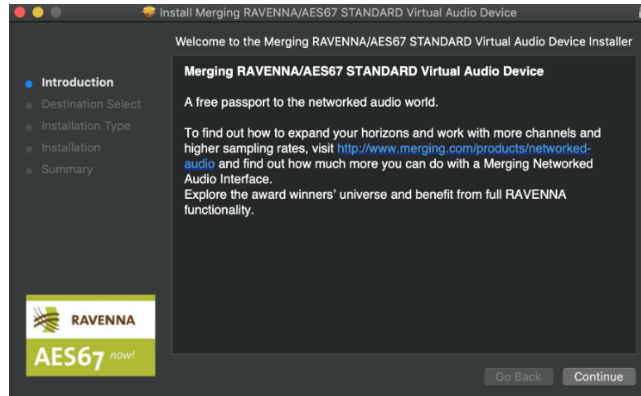
4. Follow the installer instructions. You will be prompted to enter the Administrator password

5. During the installation you will prompt that the Merging RAVENNA Audio Device hasn't been notarized or is from an unidentified developer.

Mac M1 Users must refer to the section **here**

6. Open the System Preferences > Security & Privacy, when asked.

7. Click on the Lock to enter you password and then press the Open Anyway entry to confirm your intent to open or install the app.
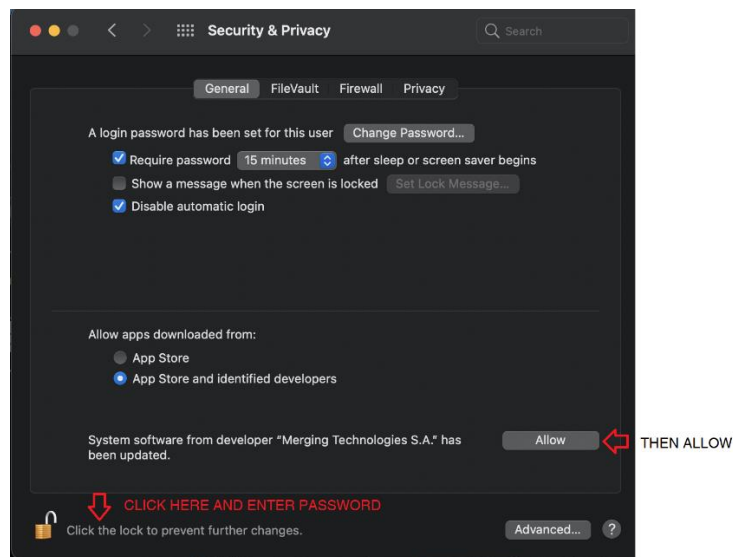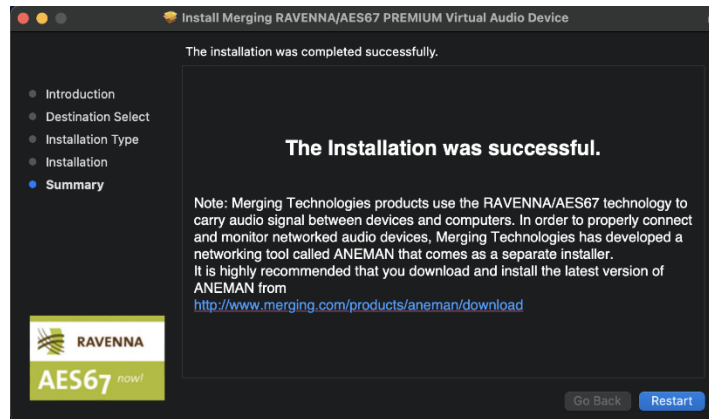
The app is now saved as an exception to your security settings

Warning: You have about 30 min to do so otherwise the application might not run and it could require an uninstall and reinstall of the VAD.

8. it will display Successful. Click Close to exit
Note: At times point 9. Can come before 8. Processed with a restart anyhow if installation was successful
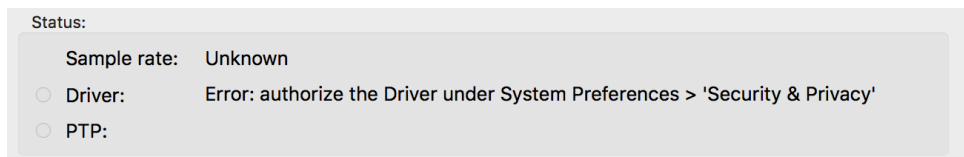

9. Restart the MAC after the driver installation and once the notarization is completed.
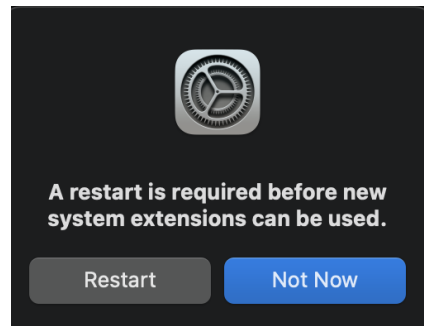
IMPORTANT:
If the Driver is not well authorized a warning should be displayed on the Driver VAD Panel

The OS requires you to immediately authorized the Driver by going to the System Preferences>Security& Privacy and Allow the driver if it is listed in the General Settings under "Software Developer".
The "ALLOW" button might not be clickable in remote access please connect a mouse locally and have a local access to the mac in order to select the "Allow" option. There is a possibility that this message does not show, that depends on how the macOS update was performed.

10. Go into MAC System Preferences, in Other open the Merging RAVENNA icon.
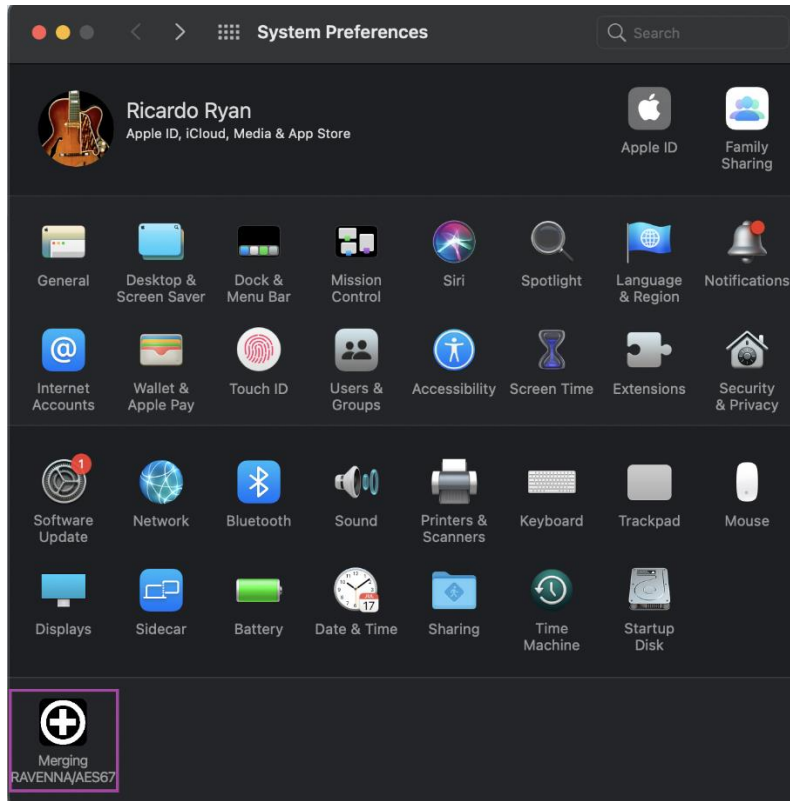
11. Configure the application you wish to use (DAW) so that the I/O connections use the Virtual Audio Device in order to perform that task use either the UNITE or RAV/AES67 mode

Apple M1-M2 Installation

Supported as of Big Sur 11.2.3 running RAVENNA -VAD (Core Audio) v3.0.47227
Supported on Monterey 12.x as of VAD 3.2
Here is how to install the VAD on a Mac running on the latest Apple Silicon M1-M2 chip.
Important : The M1 Installation procedure is subject to change with the macOS updates.
Please consult the Merging Knowledge Base page for up to date procedure.

### Reduced Security Setup and Installation

1. Boot the M1 or M2 computer in Recovery mode (turn it on with the power button pressed until the screen shows the startup options are loaded)

2. Select Options, then your login

3. In the top menu go to Utilities -> Startup Security Utility. Select the system where the Merging VAD driver will be installed

4. Continue with -> Security Policy at the bottom right

5. Select Reduced Security -> Allow user management of kernel extensions from identified developers

6. From the top Apple Menu select "Restart" in order to reboot your computer

Install the Merging VAD Audio driver

1. <u>Download</u> the latest Merging Virtual Audio Device driver (v3.2.2 and above supports M1 and M2 Silicon Macs)

2. Double click the .dmg file and install the driver

3. Follow the installer instructions. You will be prompted to enter the Administrator password

4. During the installation you will prompt that the Merging RAVENNA Audio Device hasn't been notarized or is from an unidentified developer.
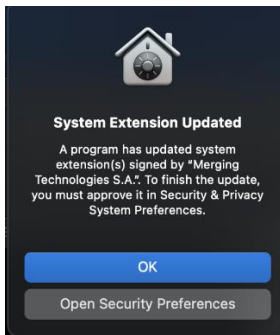

5. Select "Open System Preferences" under Security & Privacy, when asked.

6. Before the reboot for finishing the driver installation open System Preferences, Security & Privacy, tab General. There should be a grey "**Allow**" button in the right lower area. Click the unlock symbol first, then confirm using the Merging Technologies S.A. kernel extension.
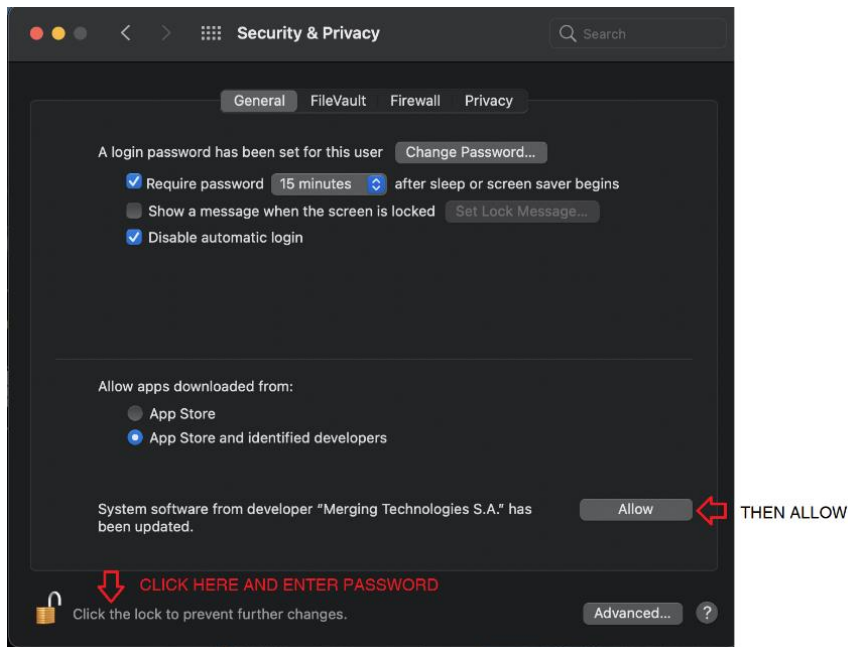
9. Click the Lock symbol, entre your password and press the "Allow" Button.

10. You will be asked to restart your mac one more time. Hit the restart button
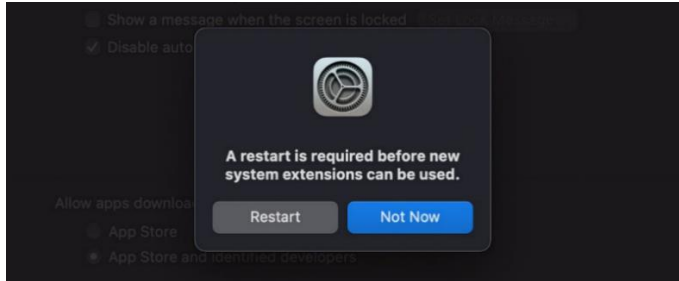
11. The MERGING VAD should now be installed and running.
Its panel can be opened from the System Preferences

Your Merging Interface is still not recognized after successful installation under macOS?

The Merging applications will have to be authorized manually in **System Preferences / 'Security and Privacy'.** *No longer than 30 minutes after installing the Merging VAD driver, you will need to click the 'Allow' button in the lower right corner and restart your computer.*

If the "**Allow**" button is NOT visible, you may need to reinstall the driver again to make it appear again.

Installation Notes.
The VAD installer includes ANEMAN that is the Merging Audio NEtwork MANager that will allow you to connect, monitor, and manage your networked audio devices.

Please download and install the latest ANEMAN in order to manage and monitor your AoIP devices from www.aneman.net/#download . As of the MERGING RAVENNA Audio Device v3.0 user can use UNITE instead of ANEMAN for simple set up AoIP connections.

For simplified connectivity we recommend the use of UNITE rather than ANEMAN.

Virtual Audio Device Panel Configuration:

OPERATION MODES

UNITE
UNITE is an automatic AoIP Stream patching feature that allows a user with a mouse click to

connect all IO between the Anubis and the System/Driver. Highly recommended for users with just one Anubis and one other device that wish to avoid AoIP complexity.

Important: UNITE is supported with Anubis Music Mission, Horus and Hapi.
Unite is not supported when Anubis is running the Monitor Mission.

RAVENNA/AES67 (RAV/AES67)

Provides full control over your AoIP RAVENNA/AES67 streams connections, using ANEMAN Audio NEtwork MANager.

STATUS SECTION
The status section will inform you of the current state of your network and device state, such as streams status, sampling rate and PTP clocking.

The section also provides device connectivity tools and error messages reports. Refer to the UNITE or RAV/AES67 mode for more details.

VAD Panel ON/OFF
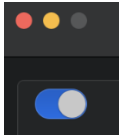
Set the Driver ON or OFF, when blue the VAD is running

Status
• Network Connections:
- • RED: Connections not valid – Error indication.

- • GREEN: Connections Valid
• Driver:
- • Gray: Driver stuck
- • Green: Driver properly running
- • Red: Problem detected.
• PTP*:
- • Green: PTP locked
- • Yellow: PTP locking
- • Red blinking: PTP unlocked

PTP support for any domain (not only 0) is supported with VAD premium version 2.0.37746.dmg and above
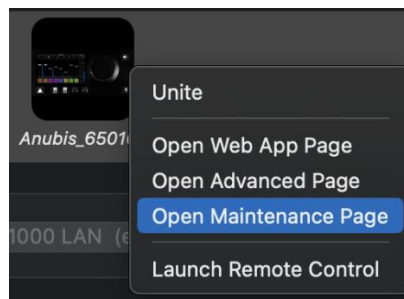
DISCOVERY ZONE

Discovery section and devices options access.

Online RAVENNA Devices:

The panel shows an icon for each RAVENNA device online.

• Clicking on the computer icon opens the Advanced Settings RAVENNA pages

• Clicking on the RAVENNA/AES67 Network Hardware icon opens the web browser and loads the Remote Access web pages.

Menu Access options

UNITE / UN-UNITE

Refer to the UNITE mode and procedure for all details. Selection UNITE will automatically connect your AoIP streams.

Open Web Access

Selecting this entry will open the web browser and loads the Remote Access Web page page of your device.

Open Advanced Page:

Will open the Advanced Settings pages, this can be useful in order to connect 3rd party hardware IO to the VAD. Refer to our Advanced Settings Guidelines for more details.
https://merging.atlassian.net/wiki/spaces/PUBLICDOC/pages/4819571/Merging+RAVENNA+Advanced+Pages+User+Guide.

Open Maintenance Mode :

Allows the user to perform a firmware update of the device. Refer to the User Manual of your device for the Firmware update procedure

NETWORK INTERFACE:

Lists all available network ports. Select the network port the Network Interface is connected to.

• Gray: No interface or interface not properly configured, preventing driver to run

• Green: Driver properly running and Interface at 1Gb

- Yellow: Interface at 100Mb
- Red: Potential security issue

Auto mode: When checked the VAD will automatically choose the online interface where a Merging Device is connected.

ADVANCED SETTINGS:

VAD Standard Latencies:

✓ 1 ms (48)
4 ms (192)
6 ms (288)
10 ms (480)

VAD Premium Latencies:

0.33 ms (16)
0.67 ms (32)
1 ms (48)
✓ 1.33 ms (64)
2.67 ms (128)
4 ms (192)
5.33 ms (256)
6 ms (288)
10 ms (480)

1.33ms (64 samples). Merging recommended latency along with 48 samples AES67.

1ms (48 samples) recommended for AES67 compliance (VAD Standard/Premium)

16, 32, 48, 64, 128, 192*, 288* and 480* samples (VAD Premium)
*with version above 2.1.41930 dmg and above

Supported Host Framing: 48 - 64 - 128 samples

Safe Mode:

Depending of the configuration in place enabling this mode will ease up the play engine and could prevent some clicks from occurring

Note: Safe Mode enabled will increase the latency

Follow DoP Mode:

Identifies if the data stream provided by the application is DoP in that case the VAD is reconfigured in DSD

(**D**SD **O**ver **P**CM) DoP is a method for transporting DSD audio over PCM audio interface. This is the only way to transport DSD from Player to Audio interface as CoreAudio is not supporting DSD natively

Frequency:
Standard: Fixed at 44.1kHz or 48kHz
Premium: 44.1/48kHz, 88.2/96kHz, 176.4/192kHz, 352.4/384 kHz, DSD64, DSD128, DSD256

Number of Channels:
Inputs: ・0,2,8,16,32,40,48,56,64 (Premium goes up to 128)
Outputs ・0,2,8,16,32,40,48,56,64 (Premium goes up to 128)

Lock Settings Option:

It is possible to set a Lock Settings in the VAD panel.

Activation procedure

1. Download the file here.
https://betadownload.merging.com/ExternalLinks/VAD_CoreAudio/Panel/com.merging.audio.
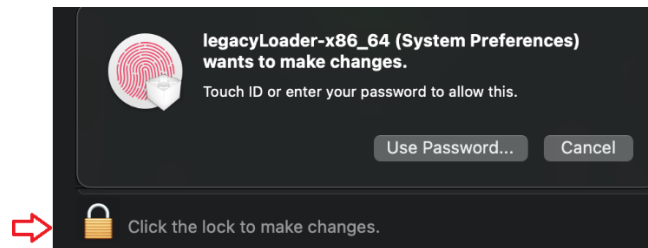MergingRAVENNAPreferencePanel.plist
2. Go to the mac /Library/Preferences
3. Copy/paste the file into the /Library/Preferences, enter your system password
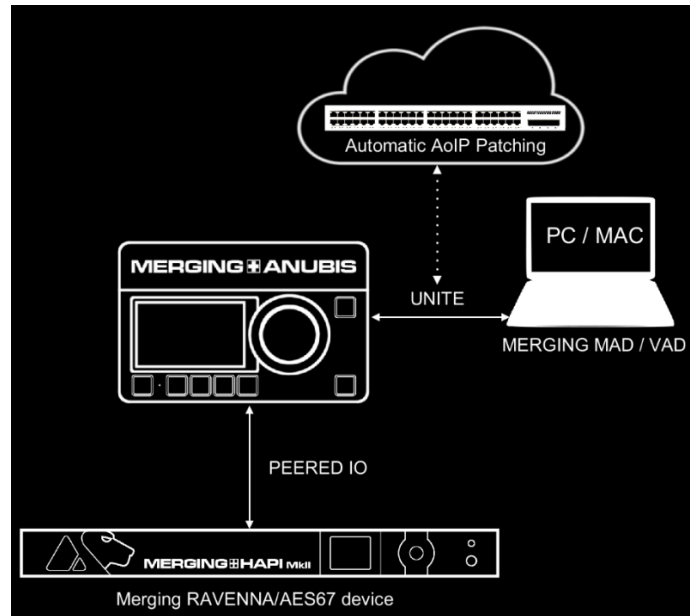4. Close and reopen the VAD Panel

A lock will appear at the bottom left of the VAD panel.
To unlock the VAD Settings click the Lock logo and it will prompt and ask for the system Password.

Once the password is entered modification can be made to the Panel settings.

UNITE your easy pass into the AoIP world

A Merging device and a Merging Driver is all you need to UNITE and simplify your RAVENNA/AES67 network streams connectivity without the need of an additional software such as ANEMAN.

What is the UNITE feature?

UNITE is an automatic AoIP Stream patching feature that allows a user with a mouse click to connect all IO between the Anubis and the System/Driver.

Expand your IO by adding a Merging RAVENNA/AES67 interface on your network or directly connect it to Anubis, peer some of those IO's and once performing UNITE all those IO can be made available in your DAW.

Important: UNITE is supported with Anubis Music Mission, Horus and Hapi.
Unite is not supported when Anubis is running the Monitor Mission, which requires the use of the RAV/AES67 mode

What is the PEERING feature?

PEER your additional device IO from Anubis and those IO's will immediately be available in your Anubis Mixer, it will expand your Mixer Channels and Output Channels
Control, Mix, Record or Route those IO's to any available device online without the need of any system/DAW.
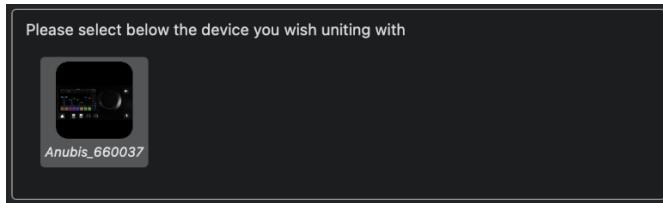*Note: All Missions support Peering. More information on Peering in the Anubis Mission Manuals.*

UNITE MODE / PROCEDURE

Unite simplifies your AoIP connectivity by bringing you a quick automatic stream patching.
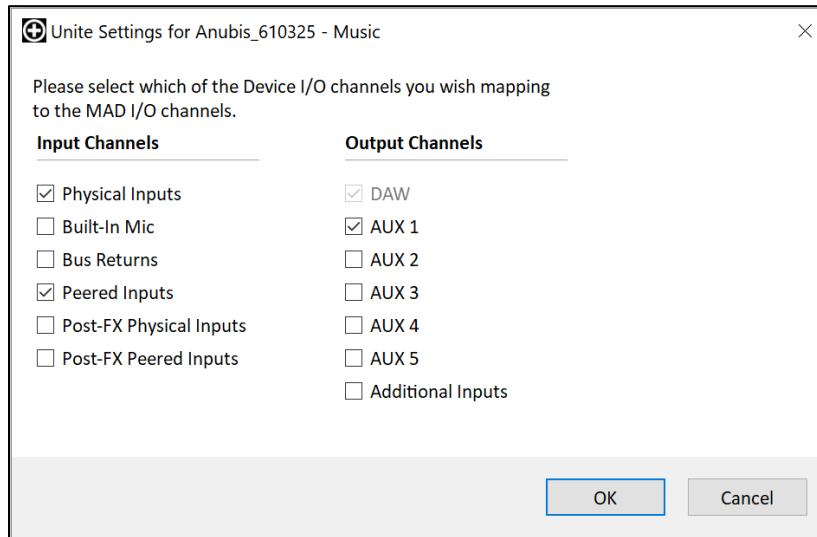
1. Select the UNITE mode tab (Middle left)

2. Click on one of the Device made available for you to UNITE. In example below we will UNITE the Anubis.

3. This will open a menu from where you can select the IO's that will be Automatically Connect and available in your application (e.g. DAW).

4. Check the IO's you wish to automatically connect

Anubis UNITE Settings: The Anubis has more flexibility in the UNITE choices then Horus or HAPI.

VAD Inputs Maps

- Physical Inputs: Anubis inputs Combo 1/2 and Line-Instrument 3/4
- Built-in Mic: Anubis Built-in Talkback
- Bus Returns: Anubis Music Mission returns: Mix, MixAlt, Cues, Reverb, Dynamics. Connect for record back

- Peered Inputs: Applies to users with another Merging RAVENNA/AES67 Interface that was peered by Anubis, refer to the Anubis User Manuals.
- Post-FX Physical Inputs: Record post processing (EQ, Dynamics, Deesser) the local inputs of the Anubis
- Post-FX Perred Inputs: Record post processing (EQ, Dynamics, Deesser) the peered inputs channels

<u>VAD Outputs Maps</u>

- DAW: Your DAW or Application Software Output Playback (stereo)
- AUX 1 to 5: Additional Software Output Playback stereo pairs for your DAW or Application.
- Additional Outputs: AES67 Generic Streams (up to 48 channels).
  Requires AES67 compatible devices and Anubis running Music Mission.

Horus & Hapi UNITE Settings:

Offers connecting choices by Modules and Interfaces.
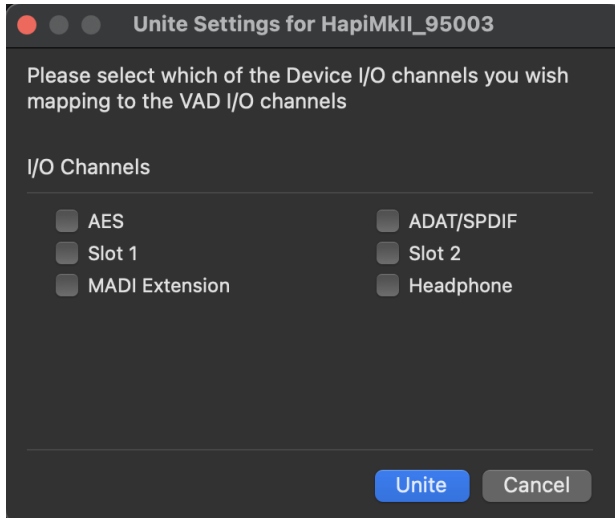
Hapi MKI / MKII	
AES 1	ADAT/SPDIF
Slot 1	Slot 2
MADI Extension	Headphone

| Horus		
AES 1	AES 2	AES 3
Slot 1	Slot 2	Slot 3
Slot 4	Slot 5	Slot 6
MADI	MADI Extension	Headphone

Note: All connections will be made upon sufficient IO selected in the VAD panel settings.

5. Once selecting Unite the AoIP connections between the Device and the VAD will automatically be made.
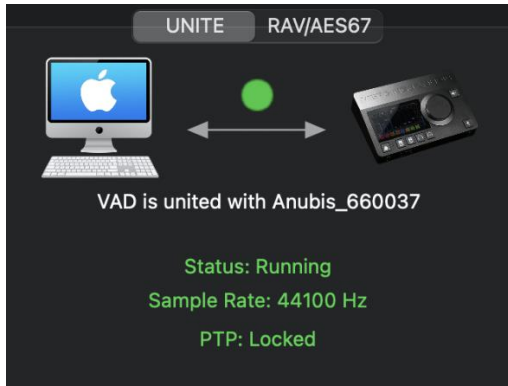
UNITE Taskbar Status Indicator

At the top of your Mac taskbar you will find the UNITE Status cross icon
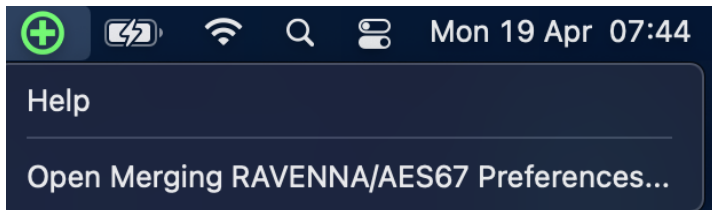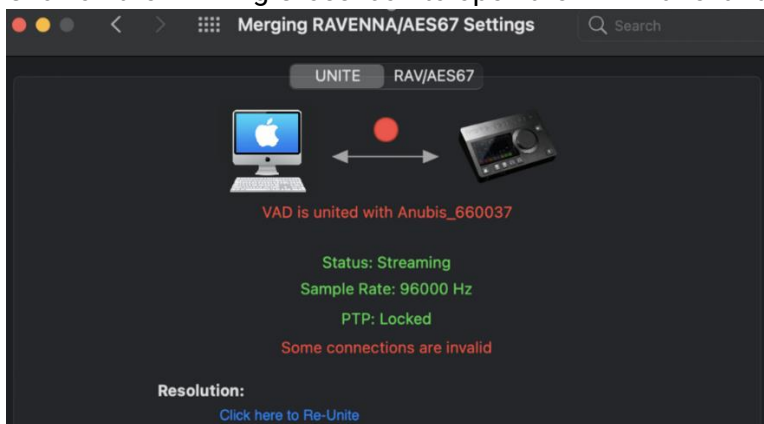

VAD Panel green cross icon – Proper operational state

VAD Panel red cross – Potentially Connection issue.

Click on the Blinking Cross icon to open the VAD Panel and view the error reported.

"Invalid connections"
Resolution: In the example here, the solution is to Re-Unite.

RAV/AES67 MODE

Provides full control over your AoIP RAVENNA/AES67 streams connections, using ANEMAN Audio NEtwork MANager.

Launch ANEMAN:

Please first download and install the latest ANEMAN from: www.aneman.net/#download
Will open ANEMAN an Audio NEtwork MANager, that will allow you to connect, monitor, and manage your networked audio devices.

Refer to the ANEMAN User Guide installed along the VAD for all details

Remote MIDI Pre control (for Premium users only)

The Remote PreAmp control are available only with the Virtual Audio Device **Premium** version

Pro Tools on Mac

Horus / Hapi / Anubis analog preamps can be controlled directly from within Avid Pro Tools running on a Mac. (using Virtual Audio Device Premium). In order to set Pro Tools up for Horus / Hapi / Anubis preamp control follow this procedure:
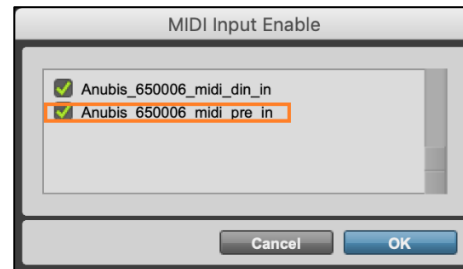
1. Check the Horus / Hapi / Anubis firmware version and update if necessary, to the latest version.

2. Connect Horus / Hapi / Anubis to the system running Pro Tools through the Ethernet port.

Within Pro Tools

3. Launch Pro Tools and configure to work with RAVENNA Core Audio I/O.
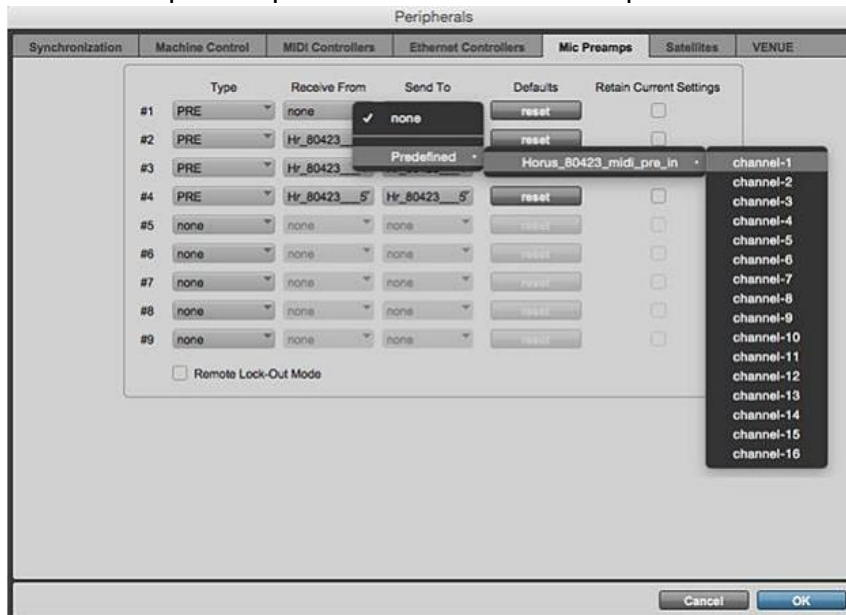
4. Open Pro Tools Setup>MIDI>Input Devices…
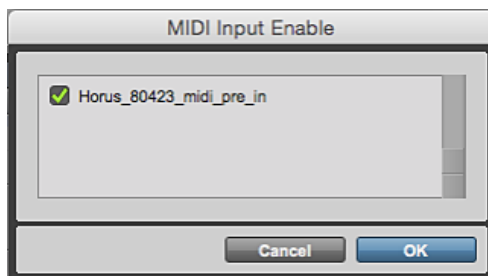
Mac MIDI Studio Panel

5. Enable the Merging RAVENNA interface (Horus, Hapi or Anubis).
6. Open Pro Tools>Setup>Peripherals Settings.

7. In the Peripherals panel select the Mic Preamps tab:

Peripherals panel - Mic Preamps tab

8. Select in order:

|	
Type	**PRE**
Receive	**From Horus_80xxx_midi_pre_in** (or Anubis_65XXXX_midi_pre_in)
Send To	**Horus_80xxx_midi_pre_out** (or Anubis_65XXXX_midi_pre_out)

Note:
• For the first AD module Receive From > Channel 1 and Send To Channel 1 must be set (Anubis will be as of cannel #9 with latest versions)
• For the second AD module Receive From > Channel 2 and Send To Channel 2 must be set.
• For the third AD module Receive From > Channel 3 and Send To Channel 3 must be set.
• For the fourth AD module Receive From > Channel 4 and Send To Channel 4 must be set

Warning: Horus and Hapi users must verify the order of their AD modules as the Channel numbering is based on slot position. Anubis users will typically receive from Channel 1 to Channel 1.

9. Click on OK to close the Peripherals panel.

Within Pro Tools

10. Open the Pro Tools **I/O Setup** panel:

Pro Tools I/O Setup - Mic Preamps tab
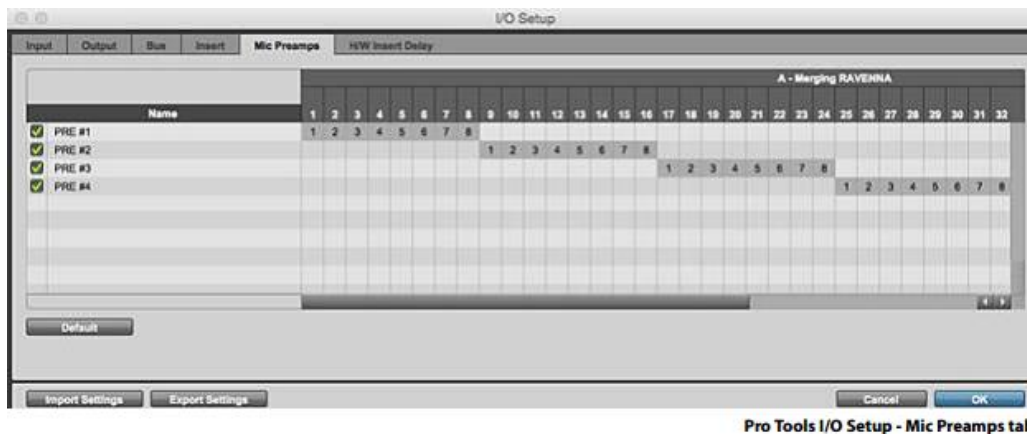
11. In the **Mic Preamps** tab enable **Horus PRE #1** etc. check the boxes to the left of the entries.
12. Click on OK to close the **I/O Setup** panel.

The Horus, Hapi and Anubis Preamp controls will be available within Pro Tools when the Horus / Hapi / Anubis Preamps are connected to the Pro Tools Mixer Strip Inputs.

Note: Information about the MIDI-Din are available in the Merging Knowledge Database
https://merging.atlassian.net/wiki/spaces/PUBLICDOC/pages/4819812/TimeCode+Setup+with+Merging +RAVENNA+AES67+devices.

MISC

VAD Static Discovery:
Launch remote control by providing IP:port and the device's name in the VAD advanced pages under the "Static Discovery" tab. As per example below by replacing w,x,y,z with the Anubis IP
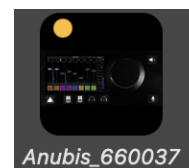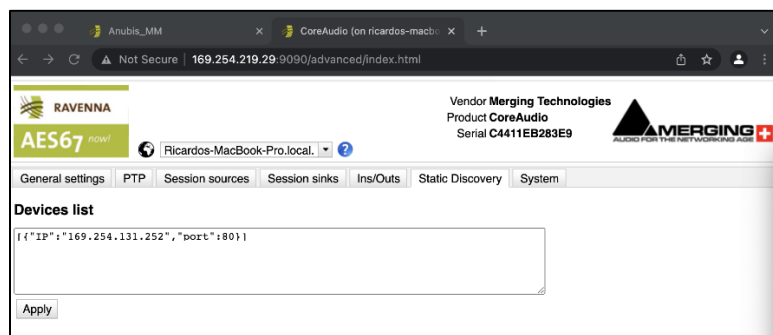
An orange dot will appear on the Anubis in Static mode.

TROUBLESHOOTING

MAC OS Configuration Guides
It is highly recommended to follow our configuration guides prior to operating the Merging RAVENNA/AES67 Virtual Audio Device.
https://merging.atlassian.net/wiki/spaces/PUBLICDOC/pages/4820445/Mac+Configuration+Guide

RAVENNA Core Audio Settings
For proper driver functioning check that the RAVENNA Core Audio panel is showed with all LEDS showing green.
Note: When the interface is shown as available (yellow or green led), the system could take some time to configure the interface (several seconds).

Latency and Clicks
Audible pops and clicks can occur when using some third-party audio interfaces or depending on the speed of the processor. To avoid this problem increase the Hardware Buffer size for the device. You should aim for the lowest possible I/O buffer size value that doesn't introduce clicks, pops, and crackles in the audio. If pops and clicks persists try reducing the IO count in the VAD panel.

Security Firewall
The Mac Firewall can block RAVENNA/AES67communication, we recommend that you turn it off
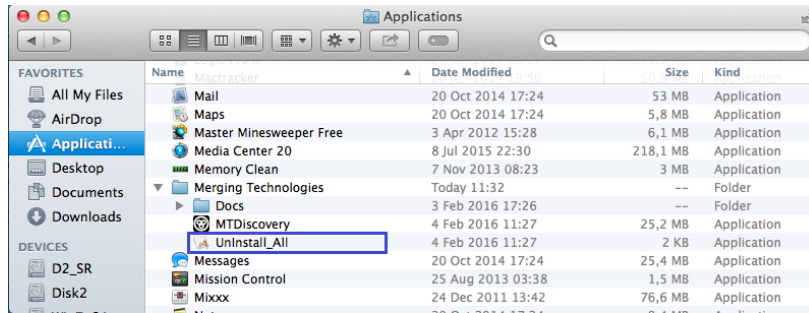

Privacy
We recommend that you disable the Parental control as well

Uninstalling the Merging Virtual Audio Device:
Use the uninstaller to remove the Merging Virtual Audio Device installation cleanly

WARNING: 10Gb Ethernet Adaptors are not certified for VAD usage. Please consider the use of an Thunderbolt to ETH adapter as per below, if you have such a Hardware Interface.

https://www.sonnettech.com/product/thunderbolt-avb-adapter/overview.html

USE CASE: Virtual Audio Device license Activation

The Merging Virtual Audio Device is intended for owners of a network interface hardware RAVENNA / AES67 compatible who wish to work under Mac OS.

- As of VAD 3.1, a license key is required for Standard operations, and a new Premium key can be purchased.
- The Virtual Audio Device will run in Premium mode automatically for owners of at least Merging Horus, Hapi or Anubis who wish to work under Mac OS. It requires at least one Merging device to be detected over the network.
- The Non-Merging Devices RAVENNA or AES67 owners will need to purchase either a VAD standard or Premium key to operate. Once the key has been purchased it must be entered in MLM as per the procedure below.

REQUIREMENTS

- Either
  - A MERGING Interface (Anubis, Hapi, Horus) connected in RAVENNA/AES67 to your system running the latest Anubis Firmware version (Anubis firmware 1.4.x minimum)
    OR
  - A valid product license key code, for Non-Merging Interface Owners.
    In such case a RAVENNA or AES67 compatible network interface must be connected to the system (macOS) and be running in order to activate the VAD license.
- An Internet connection
- Virtual Audio Device (v3.2 or above) installed.
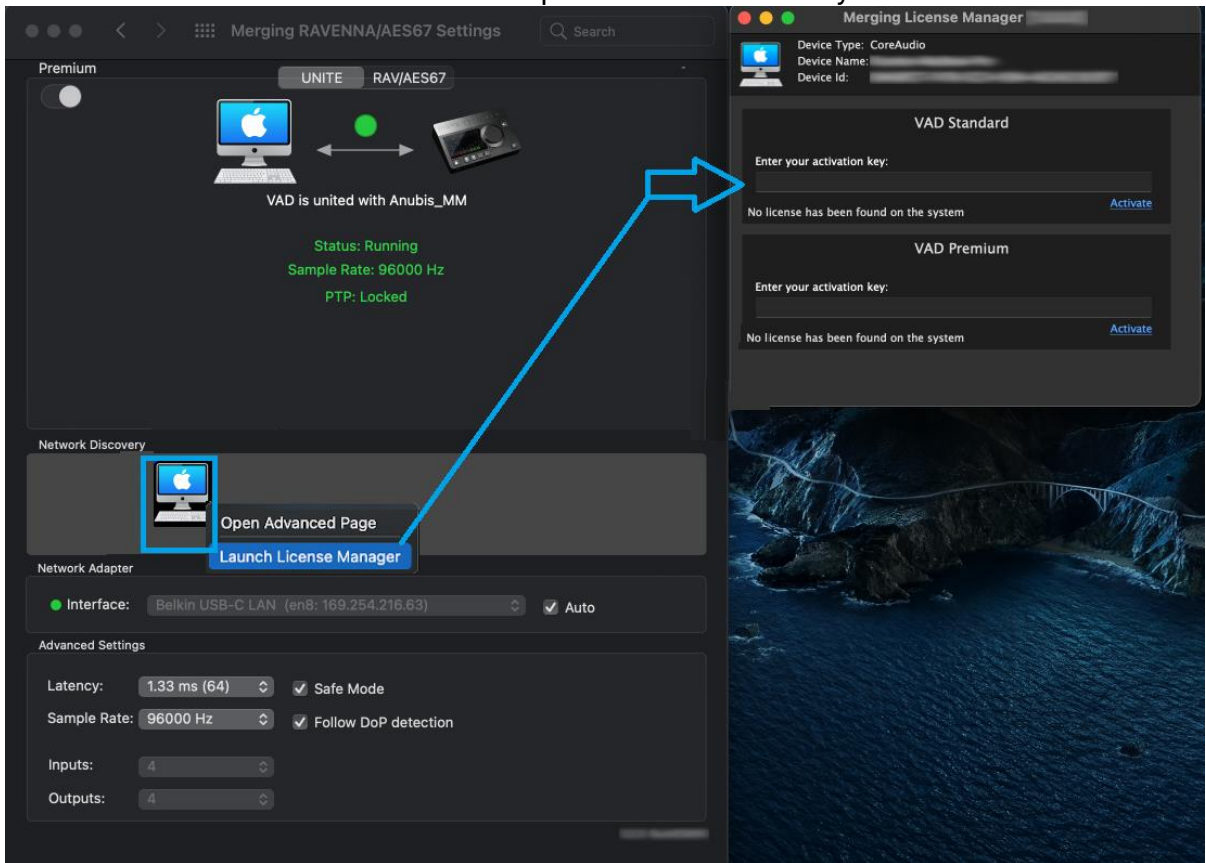
PROCEDURES:

Merging Interface Owners
Connect your MERGING interface (Anubis, Hapi or Horus) to your system and it will automatically pass the VAD to Premium mode

For Non-Merging Interface owners

1. Open the **System Preferences** > **Merging RAVENNA/AES67 Settings**.
2. Right click on the discovered SYSTEM discovered icon and select **Launch License Manager**
3. This will open the *Merging License Manager* from which you can enter the VAD key you wish to activate.
4. Enter the key code you have received for the VAD Standard or Premium feature. It should look as such XXXX-XXXXX-XXXXX-XXXXX-XXXXX-X

Enter this code in the activation field and press the **Activate** entry line.

FOR MORE INFORMATION

MERGING Downloads
https://www.merging.com/support/downloads

Knowledge Database, FAQs and Tutorials
https://merging.atlassian.net/wiki/spaces/PUBLICDOC/overview?homepageId=4816973

MERGING+ANUBIS USE CASES
https://merging.atlassian.net/wiki/spaces/PUBLICDOC/pages/4818957

MERGING SUPPORT
support@merging.com

MERGING YouTube CHANNEL
https://www.youtube.com/channel/UCR5q_dlb9dYnXTrVDWMshgw