YAMAHA

Nuage Setup Guide

Version 1.8

NUAGE

Steinberg & Yamaha

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History

March, 2013	v1.0 released
August, 2013	v1.1 released
June, 2014	v1.5 released
June, 2016	v1.7 released
September, 2016	v1.8 released

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1. Introduction

This guide explains how to build a system using the *Nuage*, the Yamaha Advanced Audio Production System.

The Yamaha Nuage is a complex system that brings together the Nuage Fader/Nuage Master, Nuage I/O, Dante Accelerator, and other Nuage hardware; a computer, video monitor, network switch, and other PC-related equipment; and software such as Steinberg NUENDO and Tools for Nuage. You will need a thorough knowledge of each component, and you will need an accurate understanding of ins and outs of their setup.

This guide will walk you step-by-step through installing each piece of primary equipment, connecting them via the various cables needed, installing software and drivers and all the aspects of setup that need to be handled before the system can be used.

2. Used Equipment List

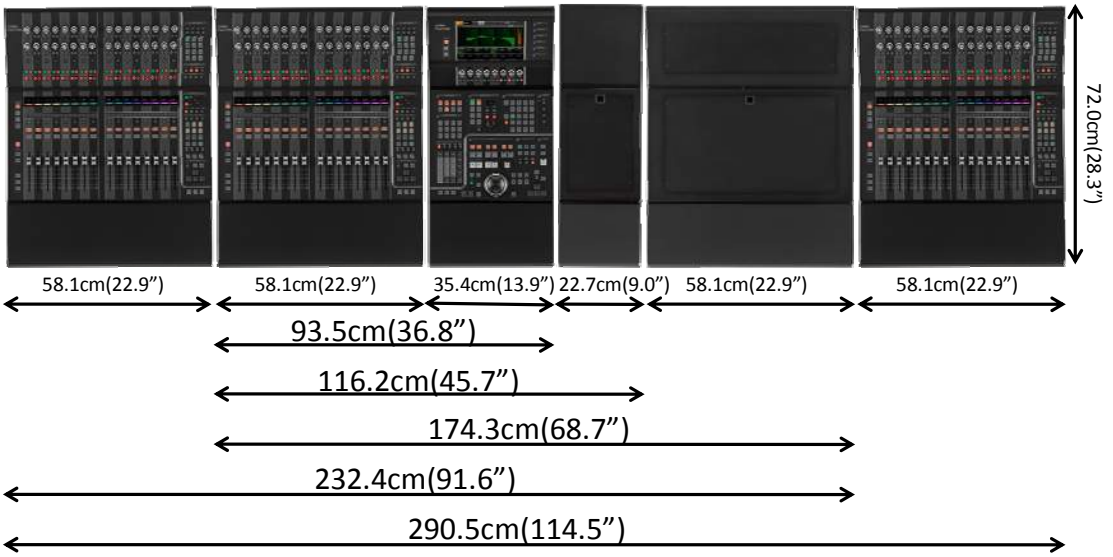
The main devices used in this guide are as follows.

1. Nuage Master Unit
2. Nuage Fader Unit, 2 units
3. Nuage I/O, 3 units (8A/D8/8AD8)
4. Nuage Workspace Unit, 2 units (large/small)
5. Dante Accelerator Card
6. Steinberg SyncStation
7. HP z24i, 3 units
8. HP Z series Workstation Z840 (Windows 7 Professional)
9. Apple Mac Pro (Mac OS X 10.10)
10. Gefen 8 × 1 DVI KVM DL Switcher, 3 units
11. Gefen 1:4 Video Splitter
12. Cisco SG300-08
13. Sony DSR-1500A
14. JL Cooper GPIO
15. External compressor
16. Yamaha AD8HR, 2 units
17. Yamaha Rio1608-D
18. Yamaha HS50M, 5 units with an HS10W

3. Installing primary equipment

3-1. Installing the controller and console desk

Be sure to set aside enough space to allow for your particular Nuage setup. The figure below shows the approximate sizes for the controllers.



We recommend a couple of Nuage console desks shown below for installing your Nuage controllers.

1. Argosy　Mirage for Nuage

http://www.argosyconsole.com/html_internal/argosy_studiofurniture_yamahaNuage_mirage32ls.html

2. AKA Design ProWave system

http://www.akadesign.co.uk/site_product/prowave/prowave.html

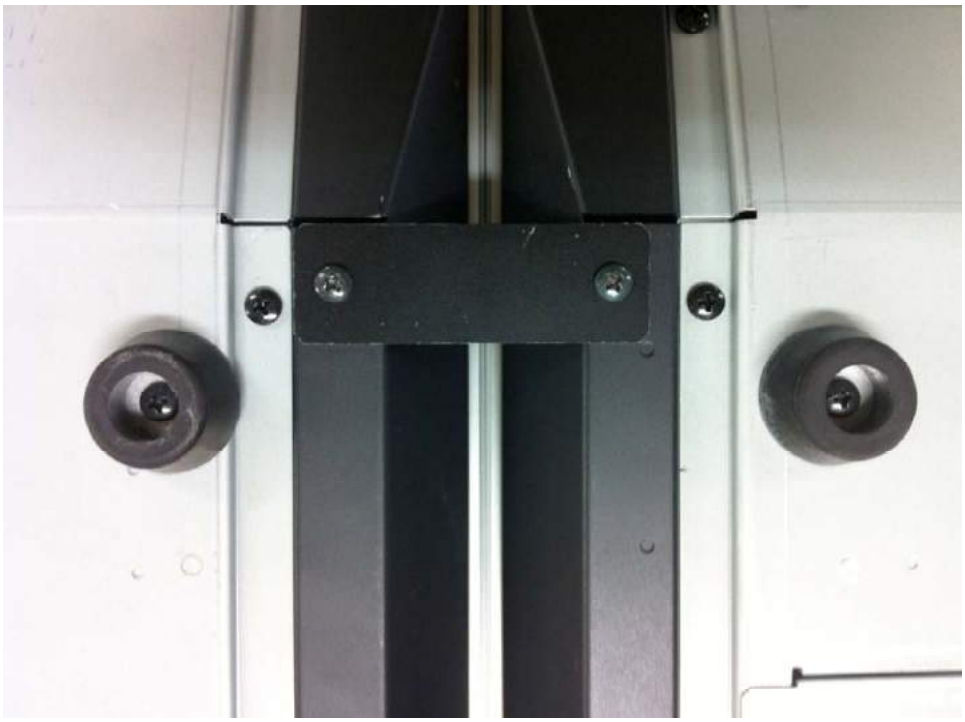
3. Sound Construction & Supply Custom Console (for Nuage)

http://www.custom-consoles.com/recording-studio-furniture.php

Once you have finished getting the console desk set up, fix each unit in place with joining brackets. To attach a joining bracket, first line up the units and remove the two neighboring screws on their undersides.

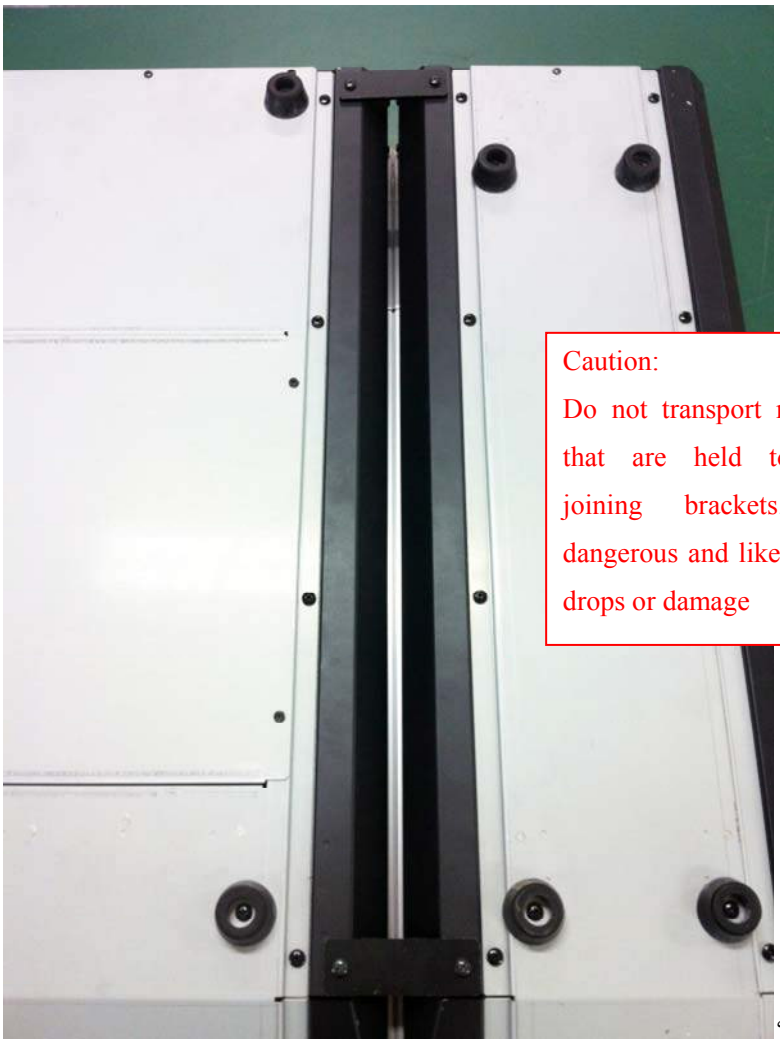
【Remove the screws】

Next, attach the joining bracket using the screws you just removed



【Place the Jointing bracket screwed into place】

Repeat the process at the opposite end of the units

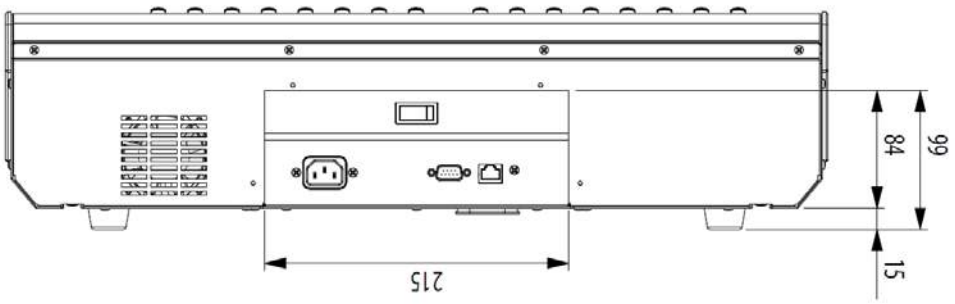


Caution:
Do not transport multiple units that are held together with joining brackets. This is dangerous and likely to result in drops or damage

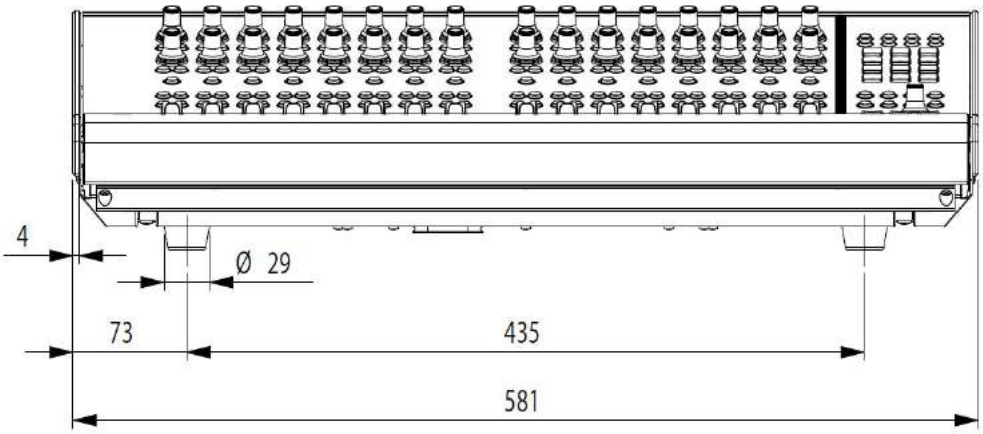
【Brackets installed in two locations】

Caution!
When multiple Fader units with Master unit are in use, always make sure to use the jointing brackets

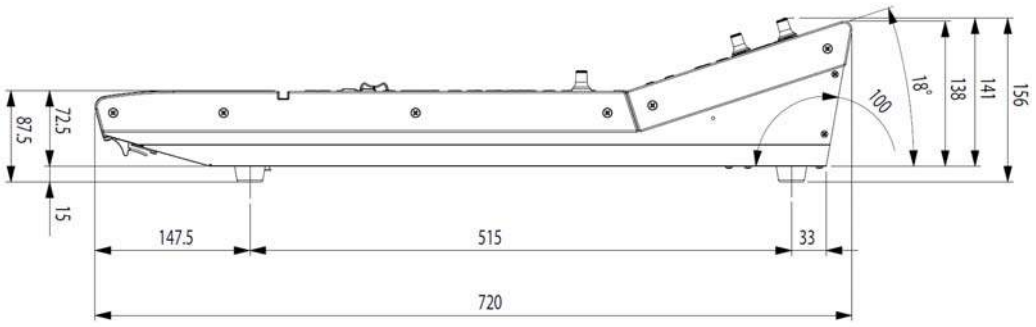
The positions for each rubber foot are as follows:



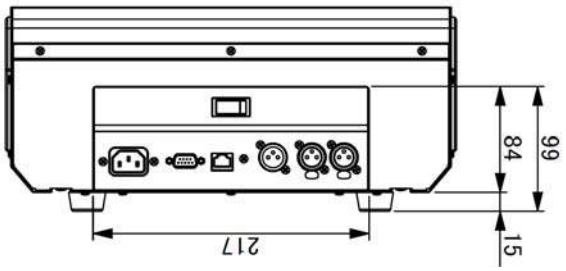
【Nuage Fader (rear)】



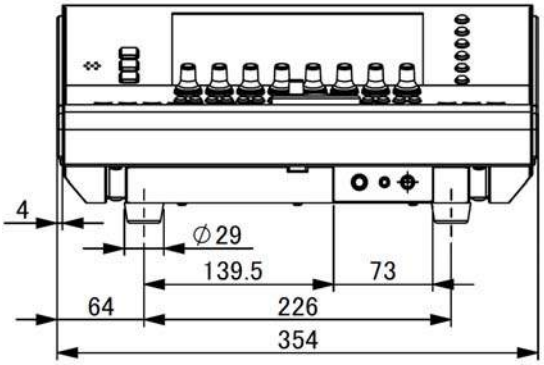
【Nuage Fader (front)】



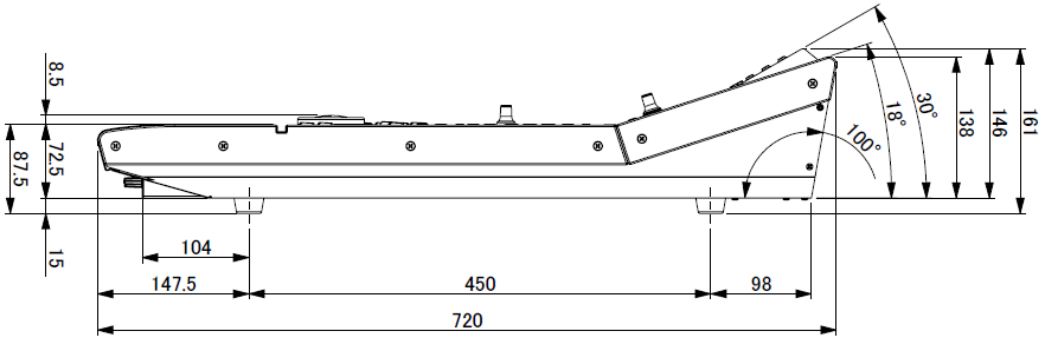
【Nuage Fader (side)】



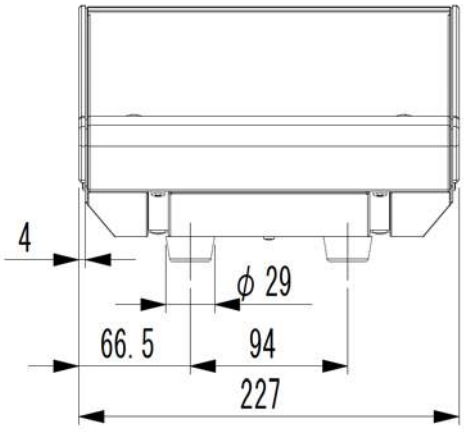
【Nuage Master (rear)】



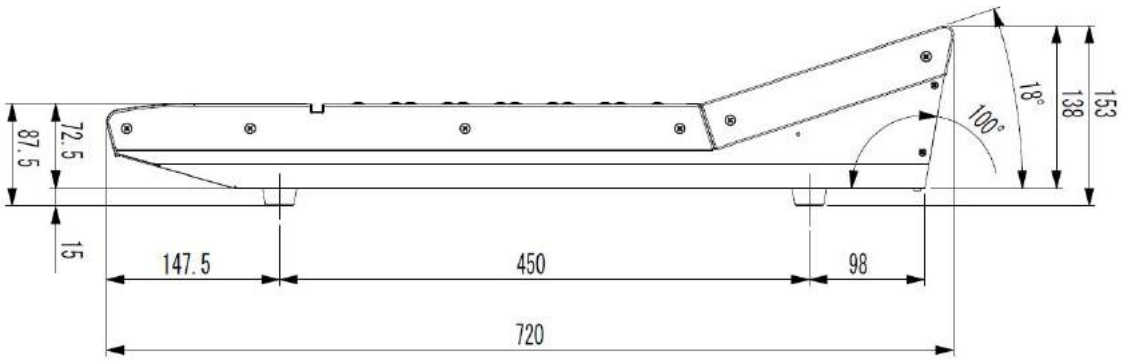
【Nuage Master (front)】



【Nuage Master (side)】



【Nuage Workspace Small (rear)】



【Nuage Workspace Small (side)】

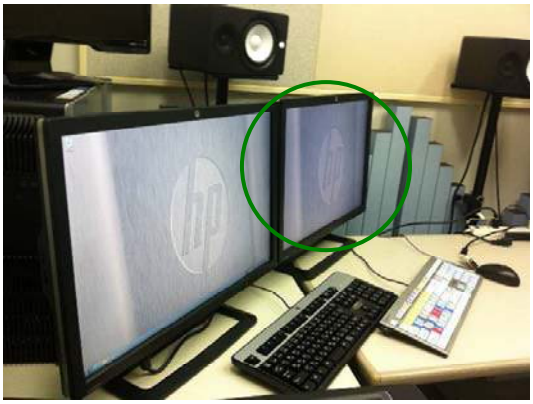
※The dimensions and the positions of the rubber feet are the same as those of Nuage Fader

3-2. Installing video monitors

To ensure accurate color reproduction and a wide viewing angle, we recommend that the monitor you use with the Nuage Fader be a professional 24-inch monitor with 1920 x 1200 resolution and in-plane-switching (IPS) technology.

Why use an IPS monitor?

Although there are large LCD monitors available at low prices, these typically use a kind of display technology called “Twisted Nematic” or TN, which has a narrow viewing angle (130–140°); when viewed from outside their viewing angle, the colors and brightness tend to change considerably, making it difficult to read them accurately.



【Good color reproduction on IPS monitors with 178° viewing angles】

【Inaccurate color and brightness on TN monitors】

Following are four recommended video monitors (current as of June 2016).

1. HP z24n

http://www8.hp.com/us/en/products/monitors/product-detail.html?oid=7483063#!tab=features

2. Dell U2413

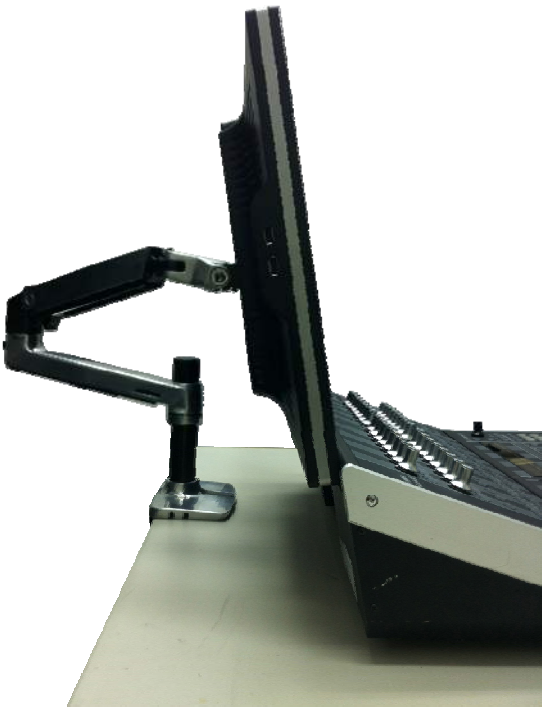
http://www.dell.com/ed/business/p/dell-u2413/pd

Mounting the video monitor

There are two approaches to mounting video monitors for Nuage.

1. Use the included monitor stand.
2. Use a monitor arm

【Included monitor stand】



【Monitor Arm】

The advantages of using monitor arms are that they let you position the monitor with more freedom, in terms of vertical and horizontal position and in terms of angle, and they don't require as much depth on your desk surface as a monitor stand. The disadvantages are that the monitor arm may be less stable, depending on how many monitors it is supporting, how much they weigh, and how far out they are cantilevered. If you can position the monitor at a suitable height and angle using the included stand, as shown above, we recommend using that; if not, we recommend using a monitor arm that supports a single monitor, and positioning it near the centerline of the clamp, to the extent this is possible.

We recommend that the video monitor be angled at 70°, in line with the rear surface of the controller.

Tip:
Adjust all monitors to be at the same height with the correct angle takes a bit of skill and experience. In case of using HP monitors, lock it at its lowest height and find the best angle from there.

When using HP Monitor ZR2440w, it is recommended to use Monitor Arm compliant to VESA100mm. Please find the following list for recommendation

Ergotron LX Desk Mount LCD Arm

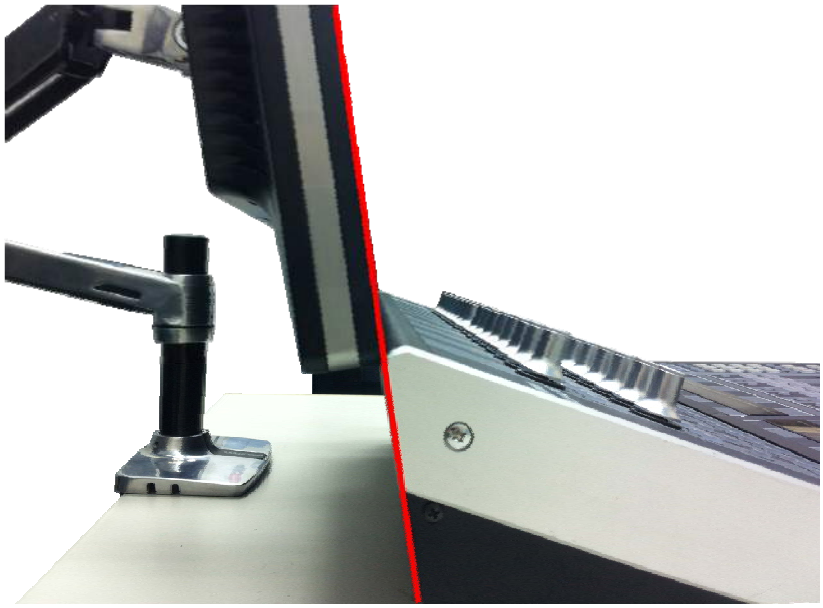
http://www.ergotron.com/ProductsDetails/tabid/65/PRDID/351/language/en-US/Default.aspx

Ergotron LX Dual Side-by-Side Arm

http://www.ergotron.com/ProductsDetails/tabid/65/PRDID/354/language/en-US/Default.aspx

Humanscale M8

http://www.humanscale.com/products/product_detail.cfm?group=m8



In order to see the information as much as possible, position the lower edge of the LCD panel to sit just above the upper edge of the controller. Note that if the video monitor's height creates acoustic problems, you can position the lower part of the LCD panel to hid it behind the rear of the controller. Adjustments to the display will be explained later

【Set to normal height】

【Lowered】

Also note that, depending on the monitor, the power button and screen-adjustment buttons may be along the lower front of the video monitor, and if the monitor is too close to the controller, one of these buttons may get pushed accidentally. Be careful to position the monitor so that this does not happen

【Note the buttons along the lower front】

TIPS：

In order to avoid unexpected power discontinuity, press and hold the power button for ten seconds when the monitor display is on to turn it into Power Button Lockout mode. And in order to turn the mode off, press and hold the power button for 10 seconds again.

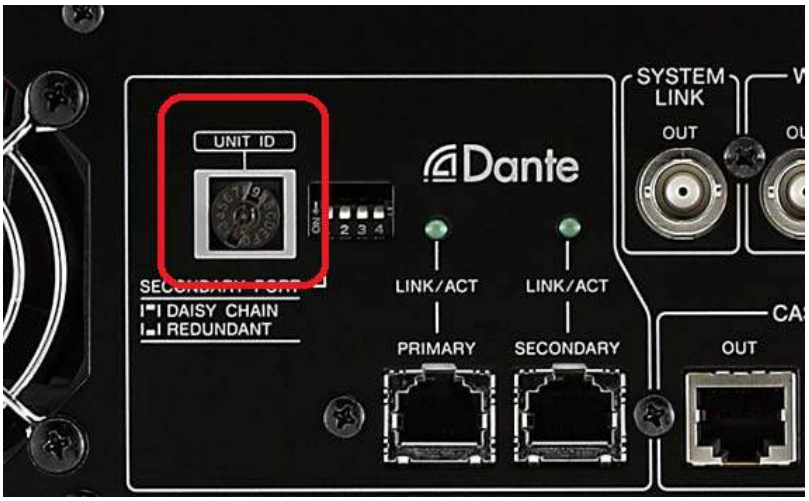
3-3. Installing Nuage I/O

Nuage I/O is a 19-inch rack-mount equipment in 2U. Please prepare enough rack space as necessary. Nuage I/O has fan equipped on the rare panel, please install it to the machine room if there is noise from the fan.

Set up UNIT ID

When using multiple Nuage I/Os, it is necessary to set the UNIT ID on each I/O in order. Please set the UNIT ID with the rotary switch on the rear panel.

TIPS:
When other devices such as R series are in use within the same workgroup, please make sure not to use the same UNIT IDs of those devices and choose a unique ID.



【UNIT ID on Nuage I/O】

3.4. Installing the computer and peripheral hardware

Powerful computers generate a lot of fan noise, which can affect your work in a control room or studio where being quiet is required. Therefore, we recommend locating computers in the machine rooms or other isolated spaces, to the extent that is possible. If setting up in an isolated spot is a problem, we recommend setting it up in a distant spot, and that you use a sound-isolating rack.

【Sound Construction and Supply Isobox Post 24-45】

Keyboards, trackballs, etc

We recommend installing your keyboard on one of the following:

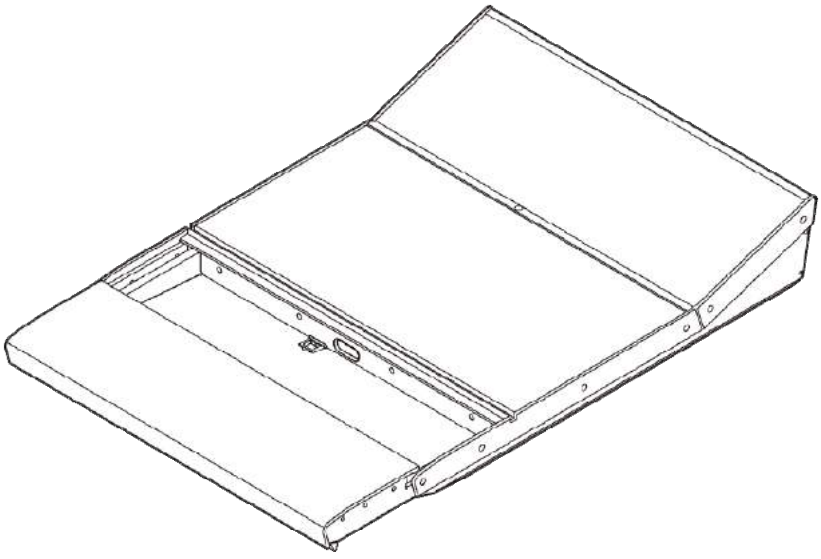
1. Nuage Fader/Workspace (large) keyboard tray *
2. On a Nuage Workspace (large)

* Accommodates a keyboard measuring up to 460 × 138 × 38 mm

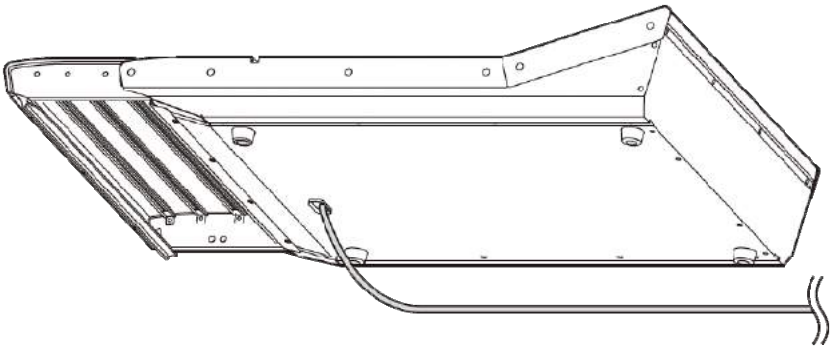
TIPS:

To fit the keyboard into the Nuage Fader or Workspace (Large), the recommend size of the keyboard up to 460 × 138 × 38 mm (18.11 × 5.43 × 1.49 inch). Please make sure your keyboard fits into the space in advance.

1. The Nuage Fader/Workspace (large) keyboard tray



【Tray in open position】



【Thread keyboard cable through hole on underside】

【Tray with keyboard in place】

2. The Nuage Workspace (large)

If the keyboard is not stored in a tray, but you want to keep it readily accessible, place it on the Workspace (large). The keyboard's cable can be passed through a hole in the Workspace cover to run underneath.

We recommend the Nuage Workspace (small) as a place to set your trackball. The cable can be passed through a hole in the cover in the same way. If you use a mouse, we recommend using a mouse pad rather than using your mouse directly on the cover.

【With trackball in use】

【With mouse in use】

3-5. Installing the network switch

We recommend installing the network switch in a machine room that is not prone to electromagnetic interference.

Switching hub (switch)

Ensure that your network switch fulfills the following requirements for use with Nuage.

1. Gigabit switch (1,000 Mbps)
2. Managed switch
3. No EEE function or off switch

4. Good jitter performance
5. DiffServ(DSCP) QoS with 4 queues

Following are some desirable (but not mandatory) features

1. With or without fan
2. Redundant power supply, internal adaptor, universal power supply
3. Easy monitoring from computer
4. VLAN、Link Aggregation、IGMP Snooping、Multicast Filtering
5. Has more ports than you will need

We recommend the following switch based on the above criteria:

- Yamaha SWP1 Series
- The Cisco SG300 Series

【Yamaha SWP1-16MMF】

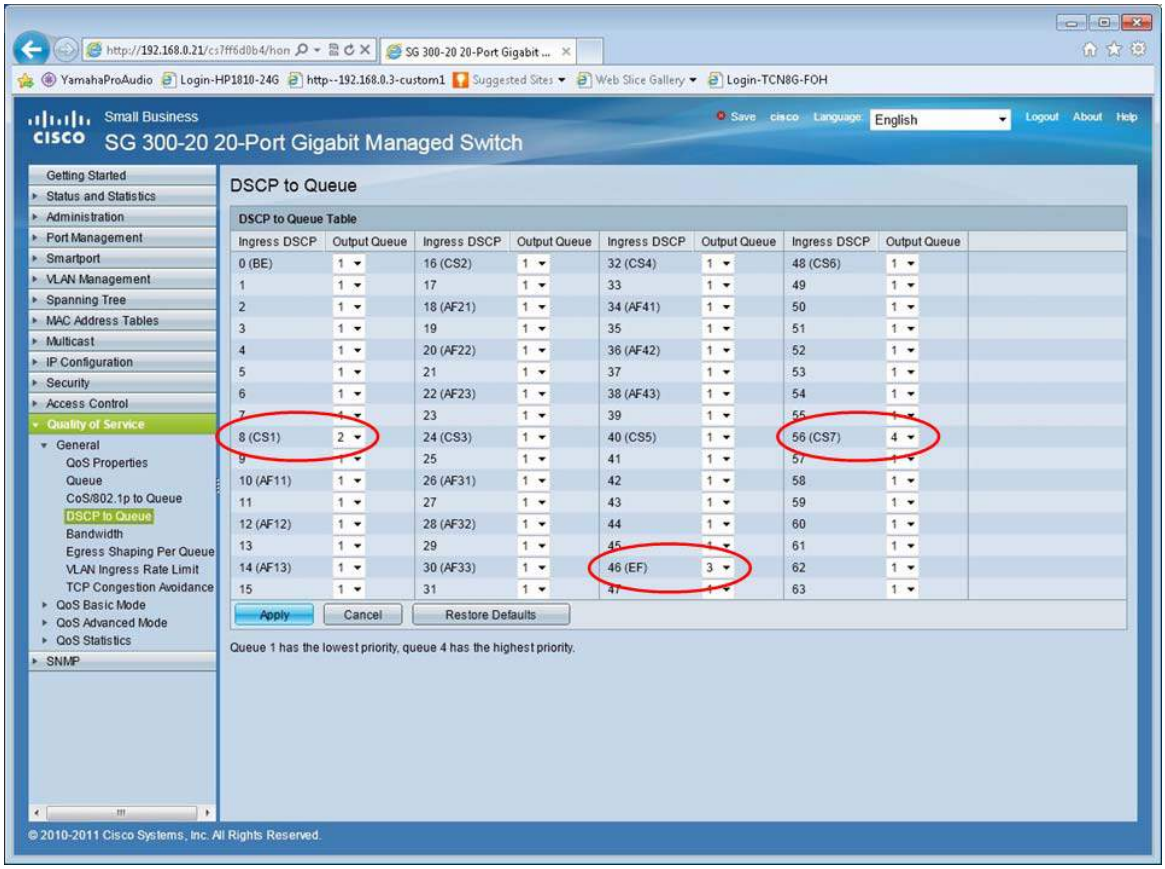
【Cisco SG300-10】

QoS Settings

To give clock signals and audio signals priority on a Dante network, set up QoS as follows.

Priority	Usage	DSCP Label	Hex	Decimal	Binary
High	Time critical PTP events	CS7	0x38	56	111000
Medium	Audio, PTP	EF	0x2E	46	101110
Low	(reserved)	CS1	0x08	8	001000
None	Other traffic	BestEffort	0x00	0	000000

You can set up a Cisco switching hub as shown below using a web browser. For more details on settings, refer to the switch's user manual.



IGMP Snoopingsettings

Turn on if using multicasting.

Using VLANs

Using physically distinct networks (separate network switches, separate network ports, etc) is a sure way to isolate the Nuage/Dante network from other networks, but a person with sufficient knowledge can also set up two separate networks on the same switch using VLANs.

Using Wi-Fi

Do not use Wi-Fi for Dante, controls, or any Nuage connections. If your hardware has built-in Wi-Fi equipment, ensure that it has been disabled. We also recommend that you disable any other forms of wireless networking, such as Bluetooth.

Network cables

We recommend the following types of cables for use with Nuage

Cat 7 to connect the Dante Accelerator card and the network switch

Cat 6 or Cat 5e for all other connections (we recommend the use of shielded cable)

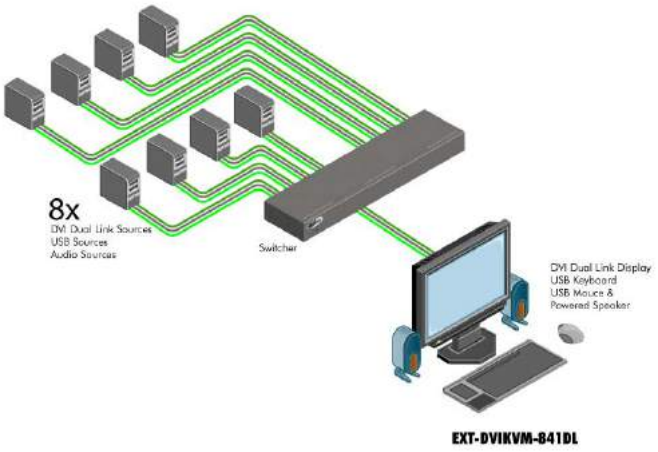
Also note that, although Ethernet cables have a theoretical maximum length of 100 m (328 feet), transmissions are not necessarily reliable at that distance. Check the value guaranteed by your cable manufacturer.

Make sure in advance that you have enough Ethernet cables, in sufficient lengths, to connect the controllers, I/O, Dante Accelerator, and computers.

3-6. Installing a KVM switch

What is a KVM switch?

KVM stands for “Keyboard, Video, Mouse,” and it is a device that switches a single keyboard, computer monitor, and mouse set to connect to one of several computers.

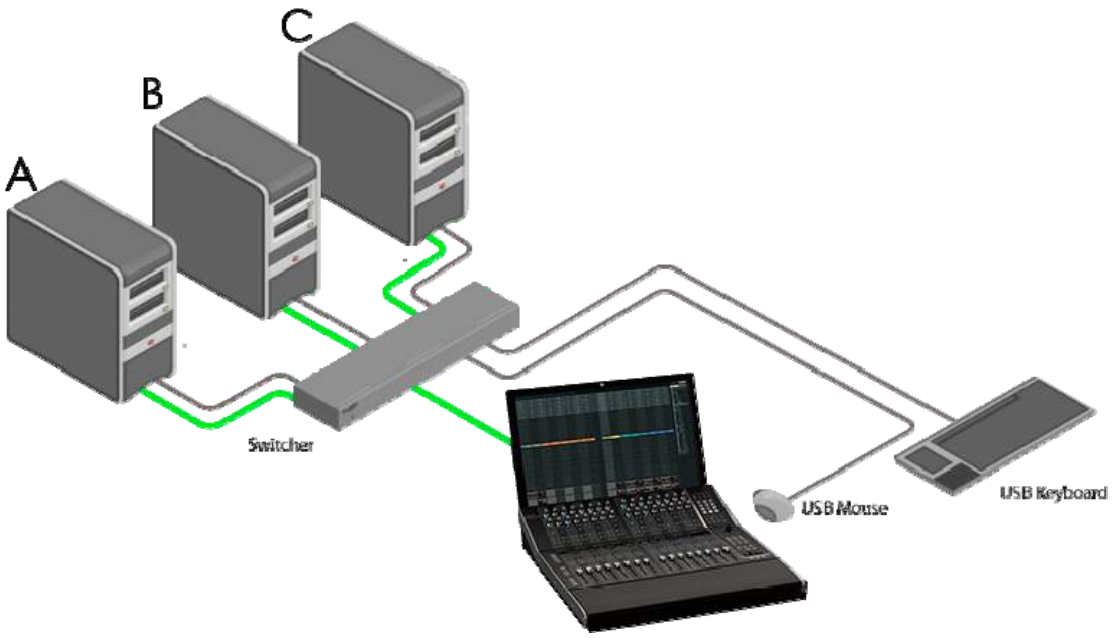


【KVM switch setup】

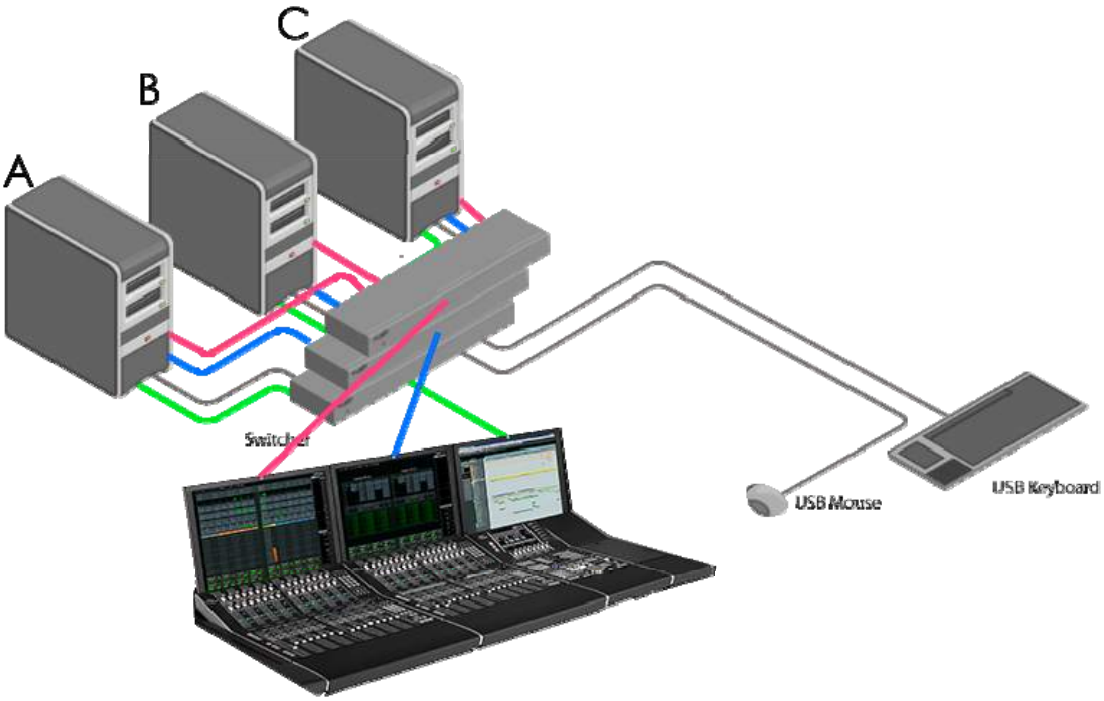
With Nuage, the DAW switch buttons on the Nuage Fader and Nuage Master let you switch among three Windows or Mac computers.

TIPS：

If there is only one set of keyboard and mouse (or trackball) to be used, the second KVM switcher and on can be replaced with less expensive video switchers (details will follow). KVM switchers should be installed in the machine room when not necessary. In that case, please use cable extenders such as USB extenders for keyboard and mouse, and DVI extenders for display monitors.



If your Nuage system uses multiple computer monitors and controllers, you will need a separate KVM for each monitor. Also, each computer will need a separate graphics card for each monitor



【Nuage Master】

【Nuage Fader】

About the MAIN DISP button on the Nuage Fader

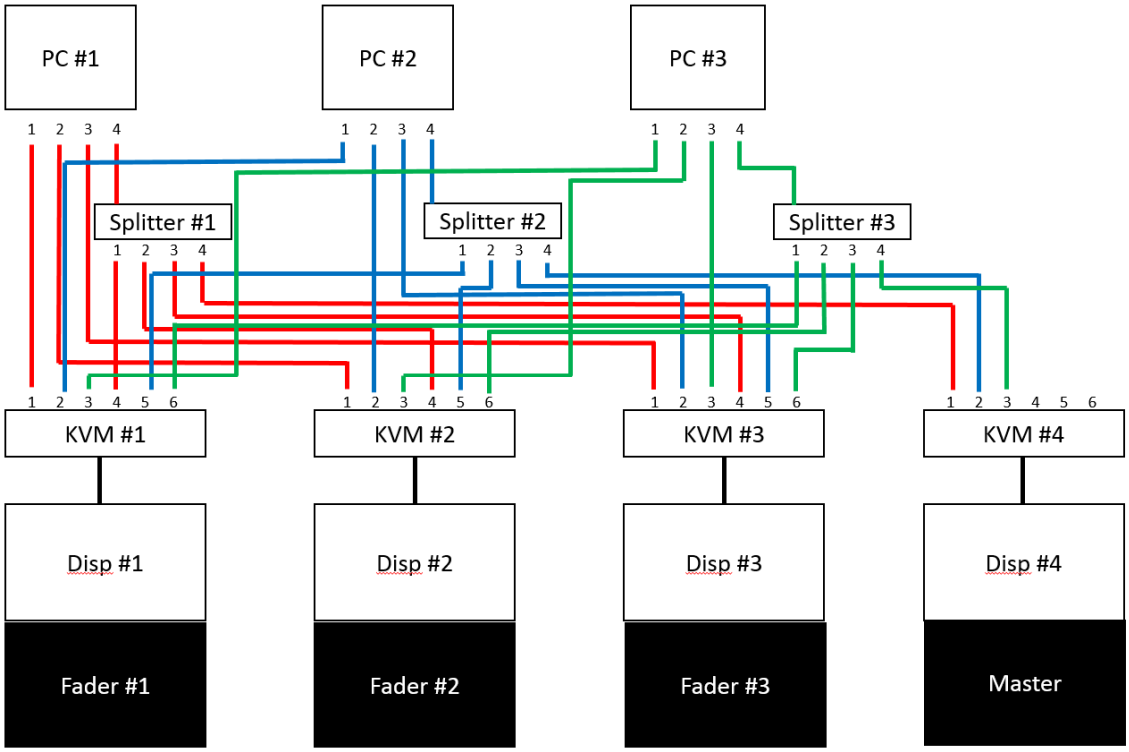
The Nuage Fader has a “MAIN DISP” button; this is used to temporarily show the main screen (Project window) being displayed on the Nuage Master monitor on the Fader monitor as well.

TIPS：

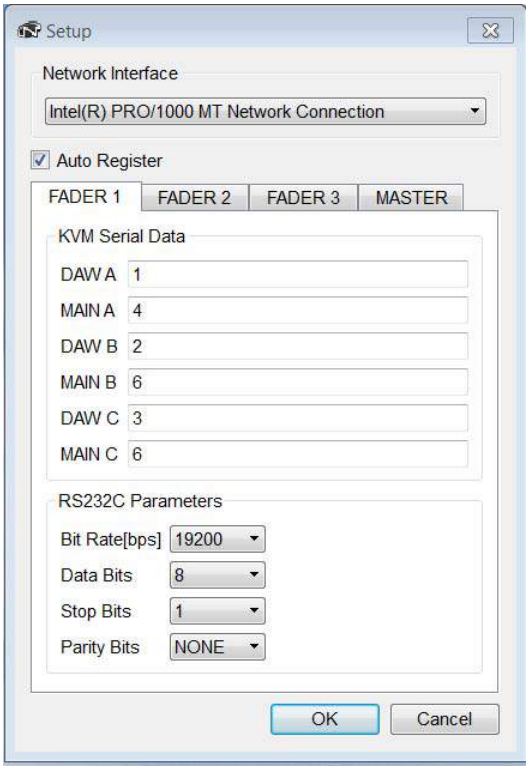
Although each computer can only output one main screen, it is necessary to use the MAIN DISP to choose which main screen to be displayed. Therefore, refer to the following figure and use the video splitter and assign the main screen to the KMV switcher.

TIPS：

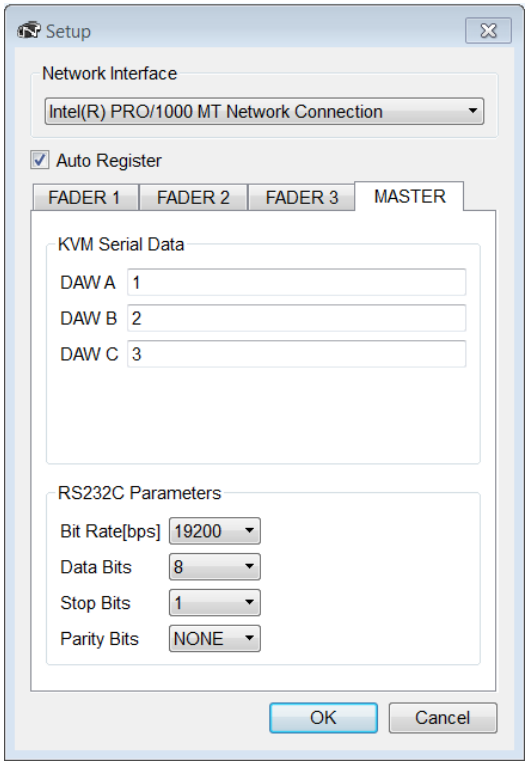
A set of mouse and keyboard can only connect to either KVM switcher. Even though each Nuage Fader can switch its monitor display independently, the only computer to be controlled with that mouse and keyboard is the one that is currently selected and displayed on the KVM switch to which the mouse and keyboard are connected.



【KVM Switcher Connection Diagram】



【Workgroup Manager Setup (FADER1-3)】



【Workgroup Manager Setup (MASTER)】

Recommended KVM switch

We recommend the following KVM switches and video switchers

【Gefen 8x1DVIKVMDL/SL】

【Gefen 4x1DVIKVMDL】

【Adder AV4PRO-DVI】

Recommended Video Splitter

We recommend the following video splitter

【Gefen 1:4 DVI DL Splitter】

TIPS：

When KVM switchers and splitters are being used, it might be the case that the screen resolution is lowered depending on what type of display cable is used. If that is the case, make sure to use a dual-link DVI display cable for each DVI connection and see if the problem is fixed.

3-7. Installing video-related equipment

The following are the main types of video-related equipment for use with Nuage

a. Synchronizer
b. Video-sync generator
c. SMPTE timecode generator
d. Nonlinear/linear video recorder
e. Video monitor
f. GPIO equipment
g. Word-clock generator

3-7-a. Synchronizer

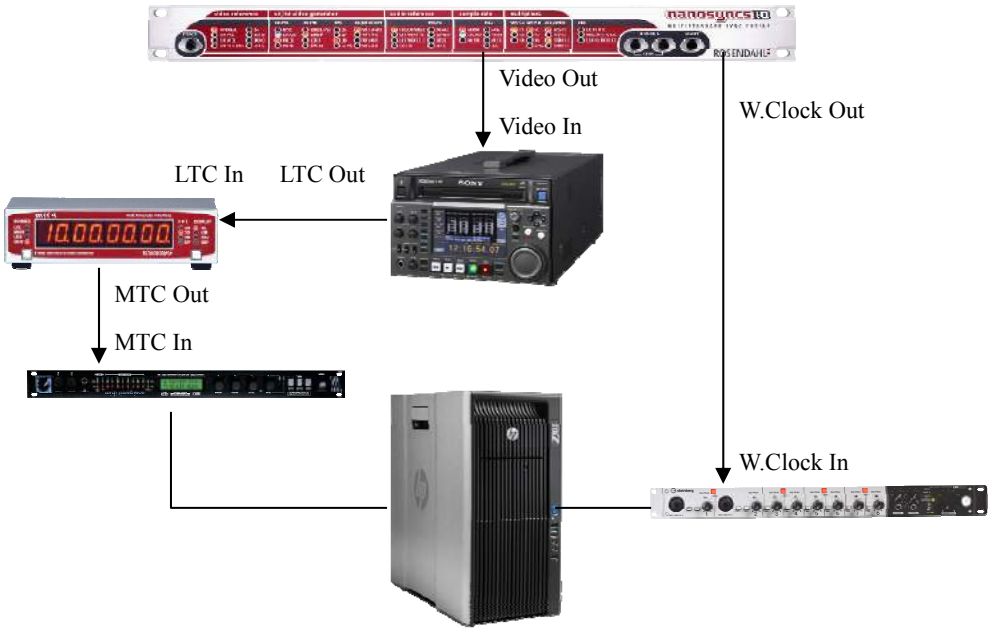
【Steinberg SyncStation】

What is a SyncStation?

Three critical elements in any audio/video production environment are reliable audio/video synchronization, accurate phase matching, and machine control. The SyncStation provides bi-level and tri-level syncing between SD/HD video devices, generates and distributes word clock at up to 192 kHz, and synchronizes and controls external devices using 9-pin or MMC (MIDI machine control), or time codes.

Why do you need a SyncStation?

If you use a synchronizer from another company (eg the Rosendahl NanoSync) and not the SyncStation, you will need to use the MIDI interface, because these generally use MTC (MIDI Time Code) for syncing with a computer. And because MTC is generated based on LTC time codes, you will also need a MTC/LTC converter (eg the Rosendahl MIF4). Furthermore, you will need an audio I/O that can receive the audio sync signal (word clock) output by the synchronizer



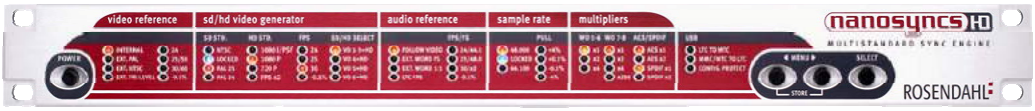
(the NanoSync HD can directly acquire MTC from the main unit over a USB connection). However, the precision of MTC is lower than that of SMPTE time codes (LTC), which can cause sync accuracy problems. The SyncStation can sync with even more precise frame-level precision, resulting in a clear difference in the amount of time needed for a video machine to lock on during editing. This is a key feature for stress-free editing.

Installing the SyncStation

The SyncStation is a "fanless" machine, so it can be installed and used in the editing room (settings can be set remotely using NUENDO). Because it connects to the computer via a USB cable, it can be placed anywhere the cable can reach. In case if the SyncStation is going to be installed in a machine room, look into using a USB extender.

The SyncStation uses an external AC adaptor, and its DC connector does not have a latch, so it can easily be pulled out. Run your wiring in such a way that it won't be pulled out easily.

3-7-b. Video-sync generator



【Rosendahl Nanosync HD】

【Blackmagic Design Sync Generator】

In order to sync Nuage to video equipment, the SyncStation will need an input sync signal for video (NTSC/PAL/HD). A vide-sync generator is the device that generates this video sync signal

3-7-c. SMPTE timecode generator

Video equipment runs on timecodes, synchronization signals that include time information, and a device that generates SMPTE timecodes such as LTC and VITC and sends video-equipment sync signals is a timecode generator. The SyncStation has XLR jacks for timecode I/O, and timecodes are calculated based on the NUENDO's position and sent to video equipment. Also, video equipment send timecodes to the SyncStation, and let NUENDO to sync to that.

3-7-d. Nonlinear/linear video recorder

【SONY DSR1500-A】

【Blackmagic Design Hyperdeck Studio Pro】

The NUENDO is capable of importing video files (QuickTime, etc) as reference when editing audio, but the conventional post-production workflow for editing audio for video has involved copying the master to a tape (or hard drive) for editing, and copying the audio to NUENDO (Track lay-down). The finished audio from the editing process is then used to overwrite the master (Track lay-back). While that is the conventional tape-based process, now that nonlinear editing systems are common, and with SSD-based cameras such as those from Blackmagic Design, there are a number of solutions that create a seamless process from shooting to video editing to audio editing. The HyperDeck Studio Pro does not come standard with a SSD, and we encourage you to get 2.5” SSDs separately

3-7-e. Video monitor

【Blackmagic Design SmartView DUO】

Synchronous editing requires video monitors for reviewing video. While SDI and HDMI are the most common formats, there is also composite video, and we recommend using a monitor that is compatible with video recorder

3-7-f. GPIO equipment

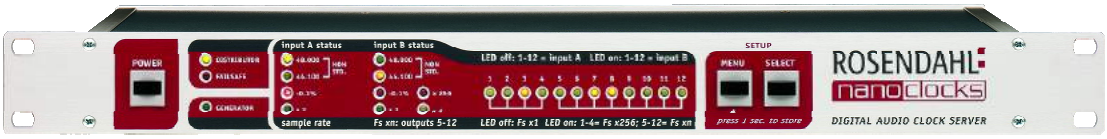
The SyncStation is equipped with GPIO (general-purpose input/output) jacks, and can take input from external devices to operate NUENDO, or can operate external devices based on NUENDO operations. The GPIO pin assignments and functions are as follows

GPI-IN	Function (Active Low)	GPI-OUT	Function(Active Low)
3	Stop Momentary	17	SyncStation Lock
4	Play Momentary	18	Record Off Momentary
5	Record Off Momentary	19	Record On Momentary
6	Record On Momentary	20	Record Continuous
7	Record Continuous	21	On-Line
8	On-Line	22	NUENDO Lock

Possibilities for external devices

Foot switch, transporter, “Now recording” red light, etc

3-7-g. Word-clock generator



【Rosendahl Nanoclocks】

Although the SyncStation takes sync-signal input from a video-sync generator to synchronize video signals, to synchronize audio from audio equipment, a sync signal from a word-clock generator is taken as input, and the two are brought into sync. The SyncStation has a word-clock input jack and multiple output jacks, as shown below, and can send the input master word-clock signal to multiple audio devices.

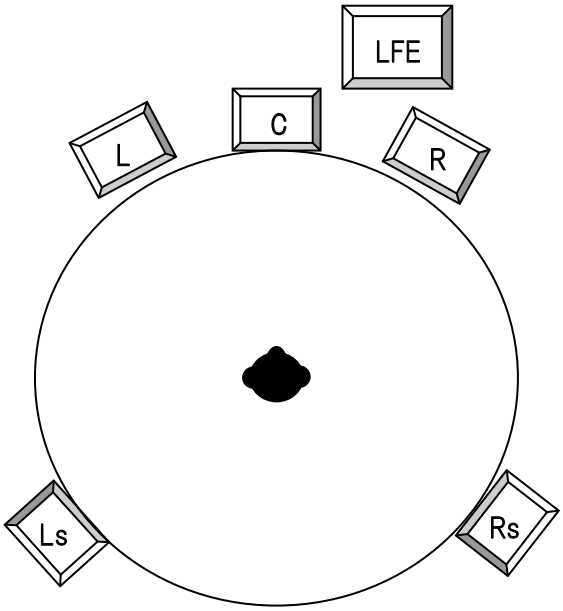
3-8. Installing powered speakers

Nuage systems allow for a variety of speaker configurations needed for monitoring environments; what follows is a walk-through of setting up 5.1-channel speakers for a typical surround-sound environment.

What is 5.1-channel surround?？

This is the most common surround-sound format, used both by movie theaters and DVDs. It is used in multiple encoding formats, including Dolby Digital, AC-3, and DTS. It uses the following six speakers.

1. Center speaker (dialog)
2. Left speaker (main stereo)
3. Right speaker (main stereo)
4. Left-surround speaker (sound effects)
5. Right-surround speaker (sound effects)
6. Low-frequency effects speaker



【Typical setup for 5.1-channel surround speakers】

We are going to omit a discussion of setting up and measuring surround speakers here, but to achieve a suitable monitoring environment, the speakers need to be located at appropriate distances, angles, and heights, and you should lay in a sufficient supply of speaker cable to do that

Recommended speakers are the Yamaha MSP Studio series (shown below, from the left, are the SW10 subwoofer, MSP7 Studio, and MSP5 Studio) and HS series (shown below, from the left, are the HS5, HS7, HS8 and HS8S subwoofer)

3-9. Installing input devices

About mic input

The Nuage's I/O system does not have a built-in mic preamp, so you cannot plug a mic into it directly. Use a separate mic preamp. We recommend the Yamaha AD8HR

【Yamaha AD8HR mic preamp/AD converter】

Nuage V1.1 enables the following parameters for each channel of AD8HR to be remotely controlled using HA Remote functionality:

- +48V on/off
- HA Gain
- HPF (High Pass Filter) on/off
- HPF (High Pass Filter) frequency

TIPS:
Since AD8HR is an A/D converter and the input signal is converted to AES/EBU digital signal up to 96kHz, you cannot use Nio500-A16 with it. In that case, please use an Nio500-D16 or Nio500-8A8D. Also, AD8HR cannot operate at 192kHz so, if Nuage I/O needs to operate at 192kHz, please use an analog mic-pre such as MLA8

Outboard gear

Install any outboard gear that you will want to use for inserts, such as compressors or reverb, in your rack. If you have a reverb with a remote control, you can install the box in your machine room and the controller in the control room; if you have a compressor that cannot be run by remote control, you can install that so that it can be manipulated directly

Miscellaneous

The Nuage Master does have a built-in headphone amp. Headphones are essential when a headphone is needed for monitoring, or when monitoring and recording both need to happen in the same space

4. Connecting equipment

4-1. Power connections

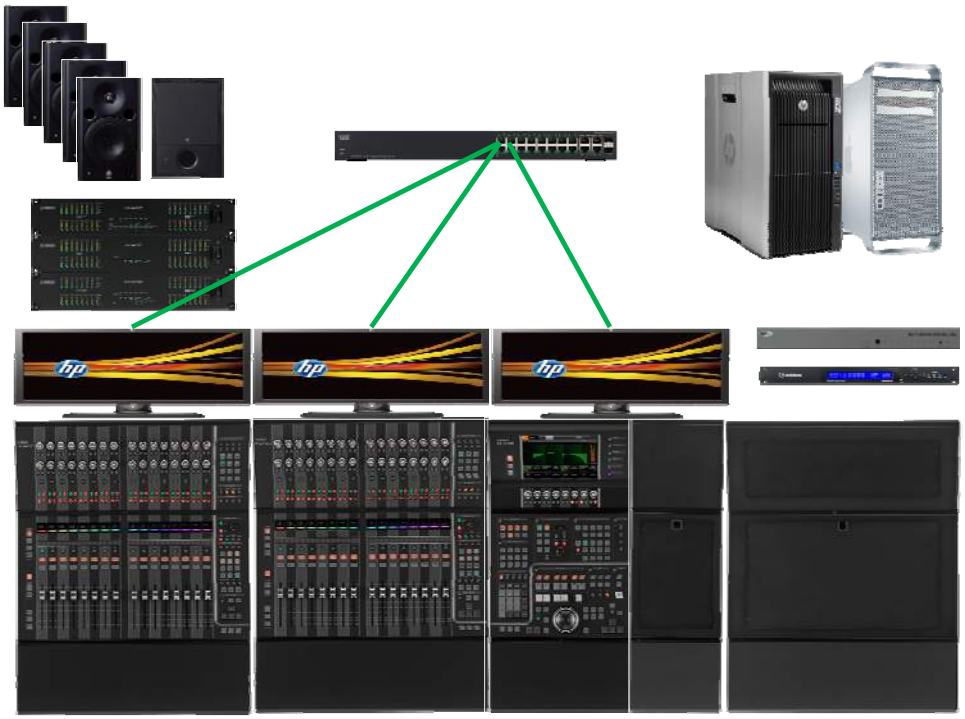
Connect all equipment mentioned in the previous sections to power. Because there are so many pieces of equipment that need to be connected to power—the controller, computer monitors, I/O, computers, network switches, KVM switches, video-related equipment, powered speakers, mic preamps, outboard gear, etc—make sure in advance that you have enough power outlets and that the circuit they are on can supply enough power. Do not use low-price mass-market outlet strips—always use power conditioners or power distributors with noise filtering that are intended specifically for use in audio applications.

4-2. Ethernet connections

Apart from the connection between the Dante Accelerator and network switch, use Cat 5e or Cat 6 cable for all Ethernet connections. Use Cat 7, which has superior shielding against electromagnetic interference, for the connection between the Dante Accelerator and network switch.

【CAT7 cable】

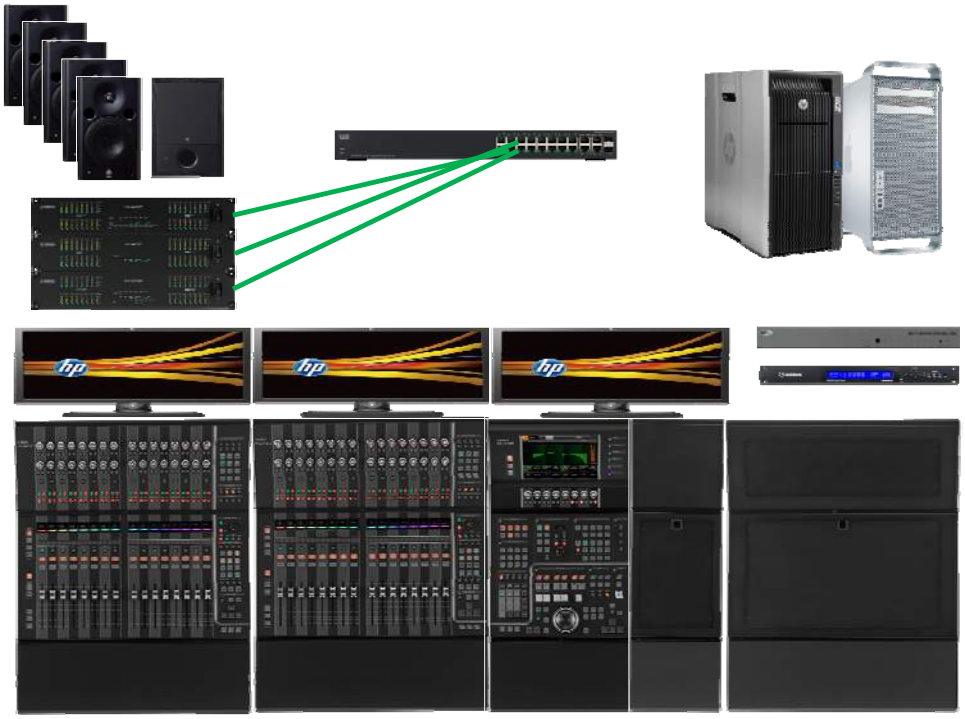
First, connect the Nuage Fader/Nuage Master to the switch



【Connection between switch and controller】

Next, connect the Nuage I/O to the network switch.

(When redundant mode is chosen)



【Connection between switch and I/O(Redundant Mode)】

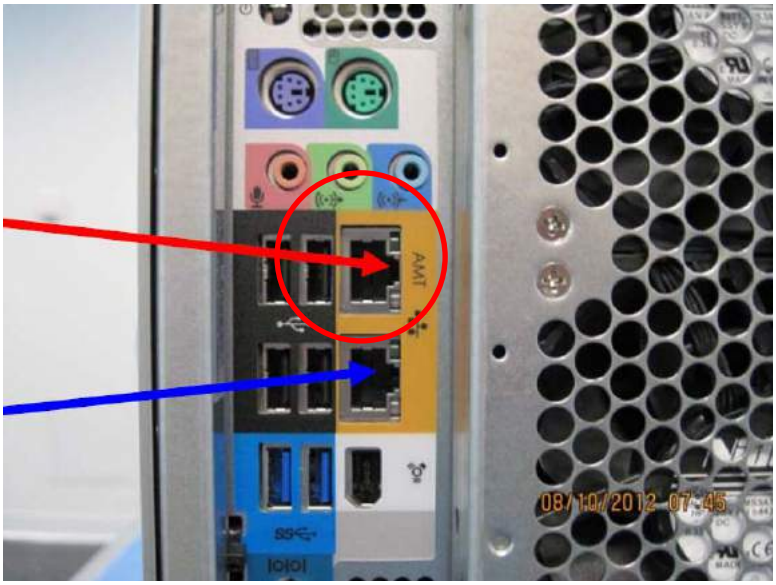
If the NIO units are connected in the Daisy chain mode:

【Connection between switch and I/O(Daisy-chain Mode)】

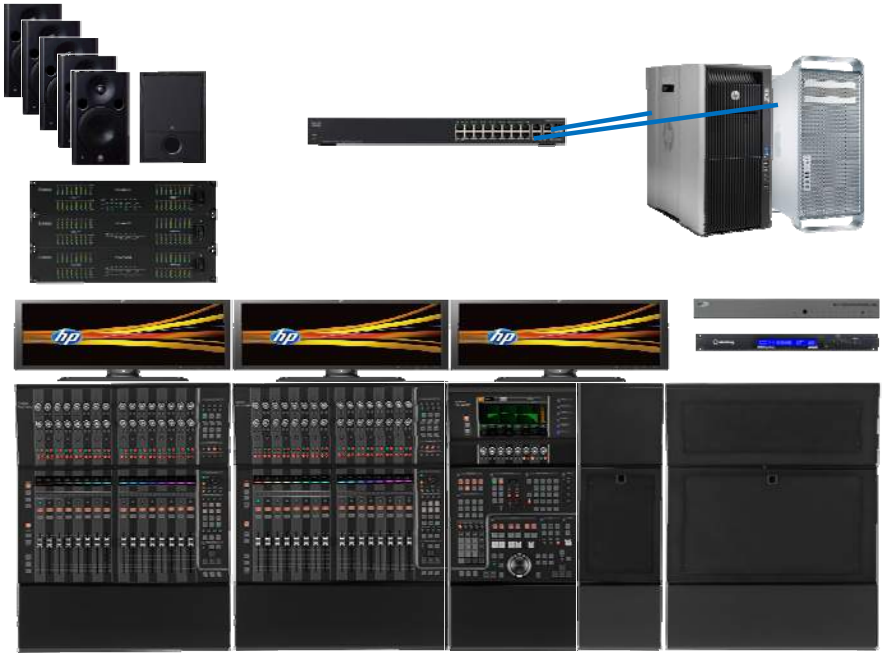
Next, connect the computers to the network switch.

【Connection between switch and computers】

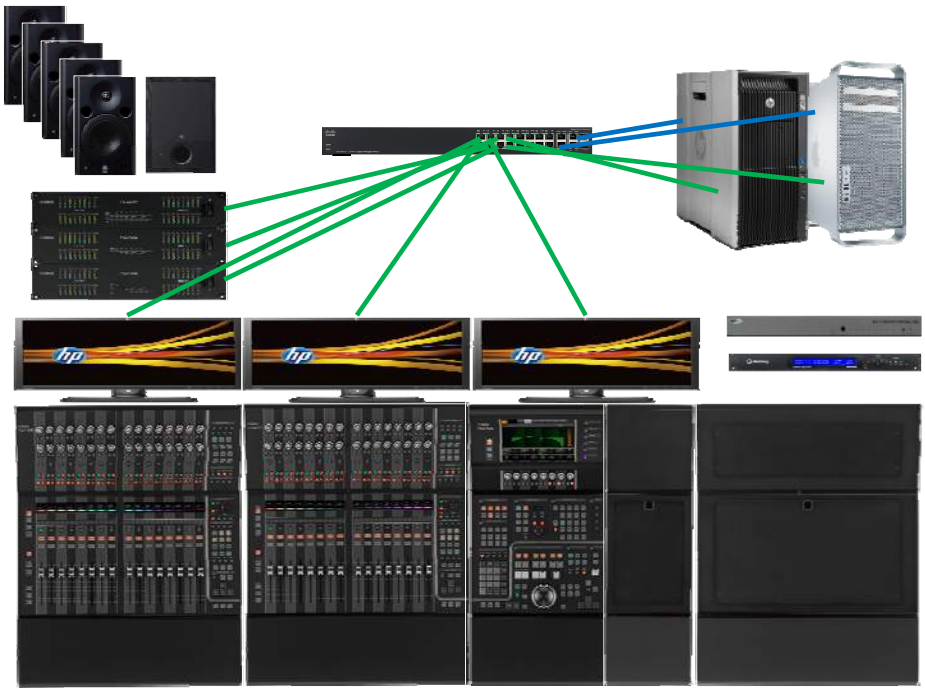
TIPS:
HP Z840 has two LAN ports, and it is always recommended to use the port labeled “AMT” and disable the AMT function.(Regarding AMT, it will be explained in another chapter)



Next, connect the Dante Accelerator to the network switch (using Cat 7 cable)



【Connection between switch and Dante Accelerator】



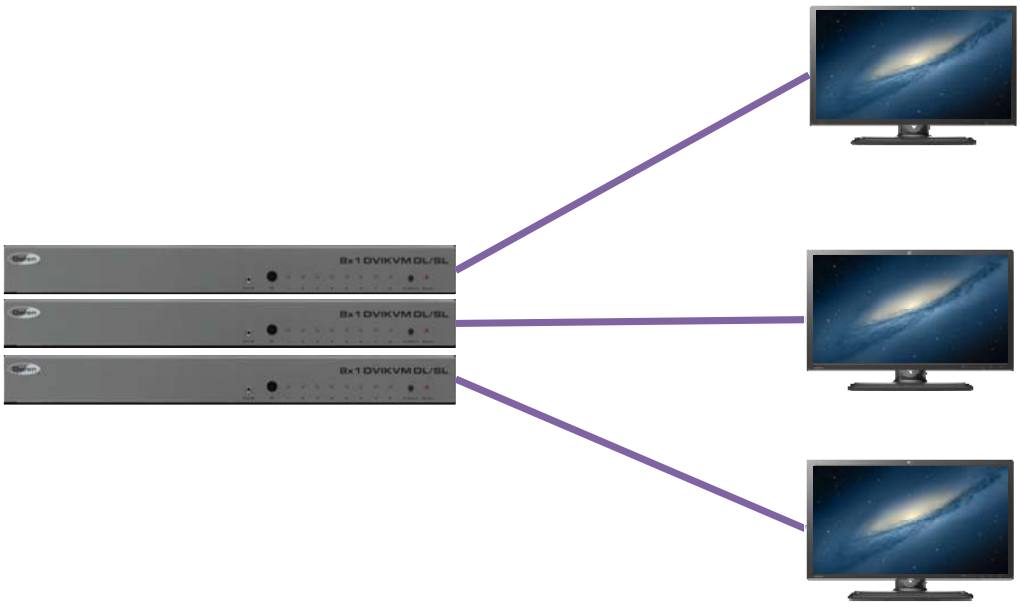
The Ethernet cable connections are now complete

4-3. KVM-switch connections

To control KVM switches from the Nuage Fader/Nuage Master, you will need one 9-pin RS-232-C cable for each controller.

【RS-232-C cable】

First, connect each KVM switch to one computer monitor.

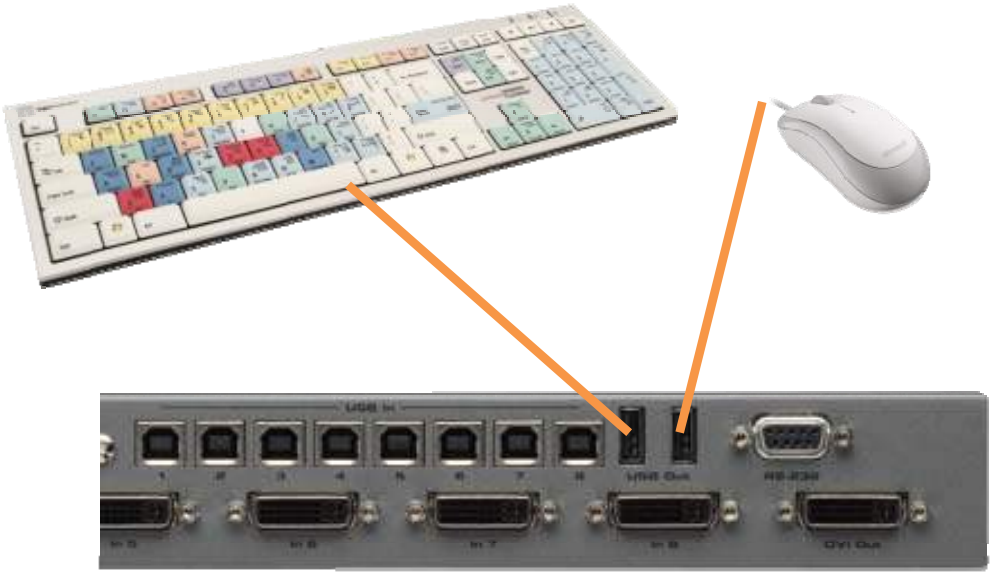


【Connections between KVM switches and computer monitors】

Next, connect RS-232-C cables to the RS-232-C jacks on the Nuage Fader/Nuage Master rear panels, and to the RS-232-C jacks on the back of the KVM switches.

【Connection between KVM switch and computers】

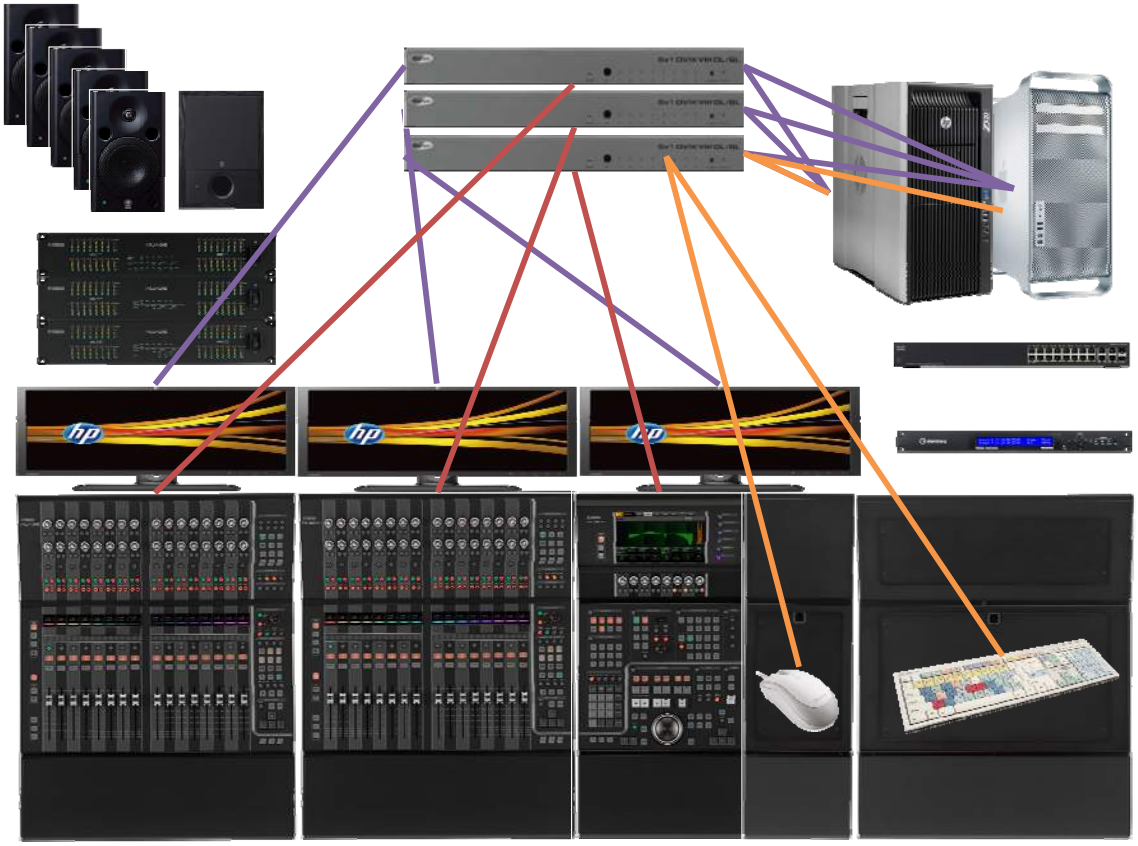
Next, connect the keyboard and mouse to the USB OUT jacks on a KVM switch.



【Connection between KVM switch and keyboard/mouse】

Next, connect the computers' USB jacks to the KVM switch's USB IN jack.

【Connection between KVM switch and computers】



The KVM switch connections are now complete.

TIPS：

When using multiple KVM switches, each switch can take input from the keyboard and mouse, but they should be connected to the one serving the main display (as a rule, the one positioned at the Nuage Master). Ensure that there are USB connections between that switch and the computers. In this type of arrangement, you only need to use a KVM switch for that station; you can use less expensive video switches for the other two stations. We currently do not recommend the use of matrix KVM switches, as they do not accept independent screen-switching control from the Nuage Fader/Master.

4-4. Audio connections

Connect audio devices in the following order:

- ✧ Decide the I/O channel setup
- ✧ Set aside the required cables
- ✧ Make connections to output devices

- ✧ Make connections needed for headphone monitoring
- ✧ Make connections needed for talkback mic
- ✧ Make all connections to input devices

This guide presupposes an I/O channel setup using the Nio500-A16 (16 analog channels) and the Nio500-D16 (16 digital channels).

Input #	I/O	Channel #	Device	Input #	I/O	Channel #	Device
1	Nio500-A16	1	DVD L	17	Nio500-D16	1	Mic 1
2		2	DVD R	18		2	Mic 2
3		3	DVD C	19		3	Mic 3
4		4	DVD Lfe	20		4	Mic 4
5		5	DVD Ls	21		5	Mic 5
6		6	DVD Rs	22		6	Mic 6
7		7	CD L	23		7	Mic 7
8		8	CD R	24		8	Mic 8
9		9	Talkback	25		9	Mic 9
10		10		26		10	Mic 10
11		11	Video Out 1	27		11	Mic 11
12		12	Video Out 2	28		12	Mic 12
13		13	Video Out 3	29		13	Mic 13
14		14	Video Out 4	30		14	Mic 14
15		15	Outboard Out L	31		15	Mic 15
16		16	Outboard Out R	32		16	Mic 16

【Input-channel setup example】

Output #	I/O	Channel #	Device	Output #	I/O	Channel #	Device
1	Nio500-A16	1	Speaker L	17	Nio500-D16	1	(not in use)
2		2	Speaker R	18		2	
3		3	Speaker C	19		3	
4		4	Speaker Lfe	20		4	
5		5	Speaker Ls	21		5	
6		6	Speaker Rs	22		6	
7		7	Cue L	23		7	
8		8	Cue R	24		8	
9		9	Headphone L	25		9	
10		10	Headphone R	26		10	
11		11	Video In 1	27		11	
12		12	Video In 2	28		12	
13		13	Video In 3	29		13	
14		14	Video In 4	30		14	
15		15	Outboard In L	31		15	
16		16	Outboard In R	32		16	

【Output-channel setup example】

Use XLR cables for the following connections

- Audio-input devices (several for mics, musical instruments, etc)
- Audio-output devices (several for speakers, etc)
- Headphone monitoring (2)
- Talkback mic (1)
- 25-pin D-sub cable (for AES/EBU digital connection).

【XLR cable】

Use a female 25-pin D-sub cable for Nuage I/O input.

【D-sub25pin cable (female)】

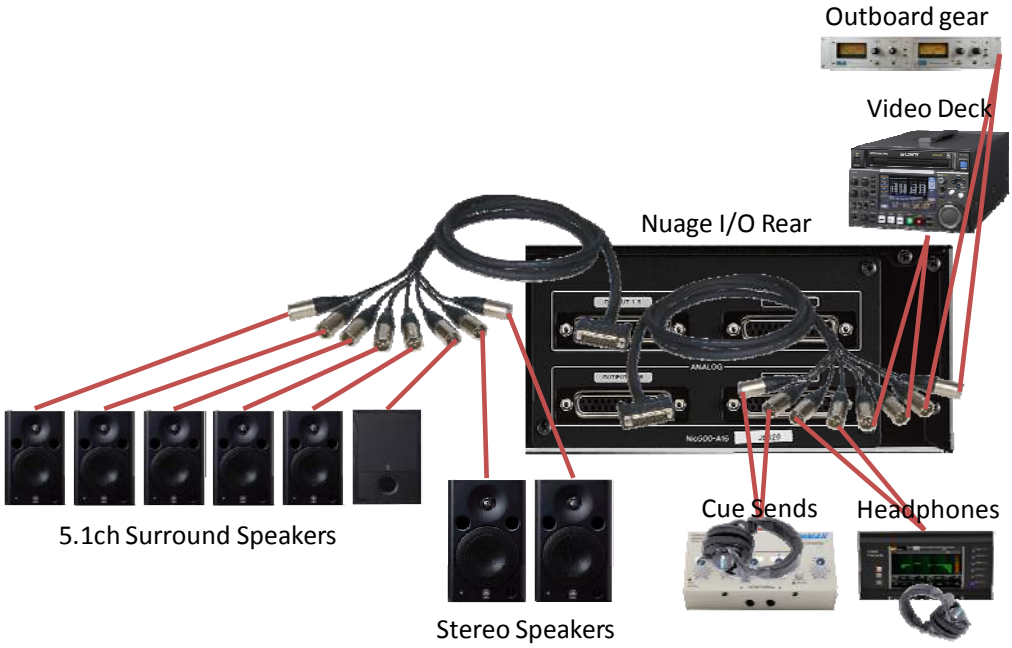
Use a male 25-pin D-sub cable for Nuage I/O output

【D-sub25pin cable (male)】

When using the AD8HR for the mic preamp, connect to the Nuage I/O's digital input with a 25-pin D-sub cable.

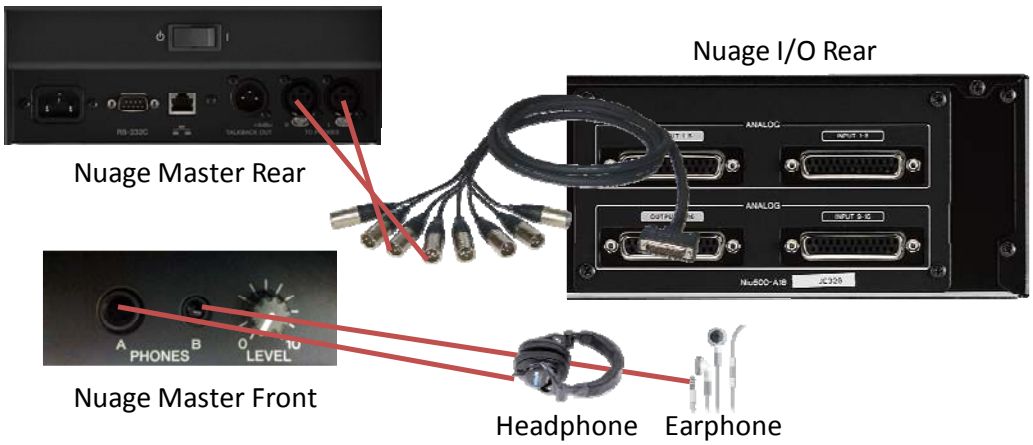
【Connection between Nuage I/O and MLA8】

Ensure that you have the appropriate number, length, and type of cables, and then connect the output devices to the Nuage I/O's analog output.



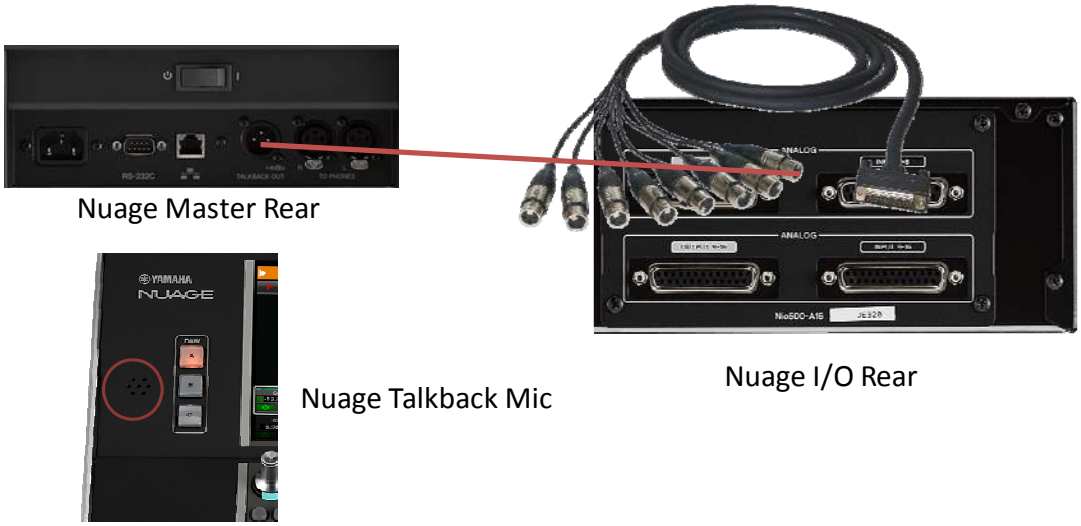
【Connection between Nuage I/O and output devices】

The outputs for headphone amp, which are assigned to channels 11 and 12, connect the two Nuage I/O outputs to the “TO PHONES” jack on the Nuage Master rear panel, which in turn connect to the “PHONES” jacks on the lower front of the Nuage Master. There are two jacks, one quarter-inch and one 3.5-mm, to accommodate headphones and in-ear earphones (both output L/R sound in stereo, being connected to “TO HOST”). Note that headphone volume can be controlled by the headphone amp’s “LEVEL” knob; as a rule, you should set volume to an appropriate level beforehand as part of control-room adjustments, discussed later on.



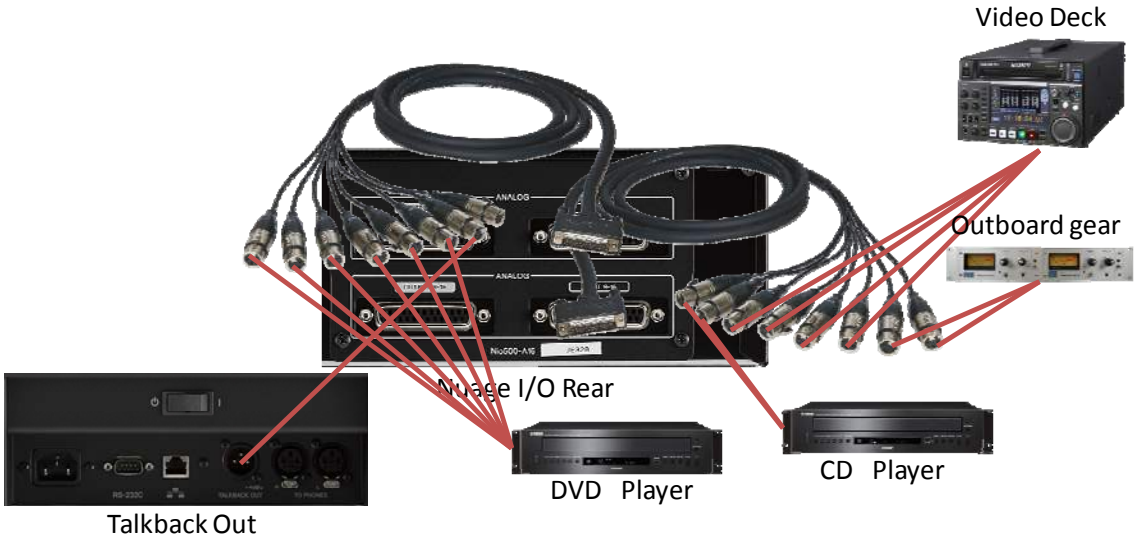
【Headphone output connections】

Next, connect the talkback mic to the Nuage I/O. The Nuage Master has a built-in talkback mic. Its output is at the “TALKBACK OUT” jack on the Nuage Master’s rear panel; connect that to any input on the Nuage I/O.



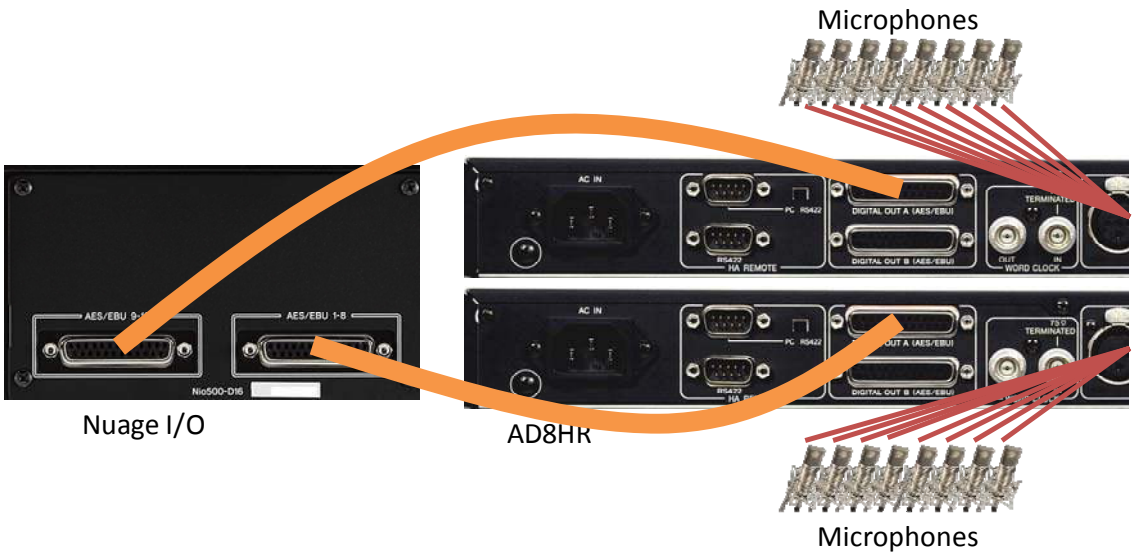
【Talkback mic connections】

Connect other line-level input devices, such as a DVD player, to the Nuage I/O’s inputs.



【Connection between Nuage I/O and other audio input devices】

Now, connect all the microphone inputs to AD8HR to Nuage I/O's inputs.



The audio connections are now complete.

4-5. AD8HR Connections

In this setup guide, we will introduce how to connect two AD8HR units (#1, #2) to Nio500-D16 and remotely control them from Nuendo.

Connect HA Remote Connectors

【AH8HR Rear Panel】

First, connect the Remote connector on the AD8HR #1 and the serial connector on the computer. Please make sure the switch next to the connector is set to "PC".

TIPS:

Among our recommended computers for Nuage, hp's Z840 has a serial connector while Z440, Z240 and Apple's Mac Pro don't. If you need to use this feature with those computers, use a USB-serial adapter cable or a PCIe card.

【USB-Serial Adapter Cable】

Next, connect the bottom connector of the first AD8HR unit and the top connector of second unit (Make sure the switches on the second unit and on are all set to "RS422").

Then, connect each AES/EBU output connector on AD8HR to the AES/EBU input on Nuage I/O.

Finally, connect the wordclock distributed from the clock master to each AD8HR unit and also Nuage I/O unit.

4-6. Video-related equipment connections and other connections

House-sync and video reference signal connections

First, connect the house sync, which provides video syncing (video sync signal), to each video device and to the SyncStation. Use a 75 Ω BNC cable.

【BNC Cable】

【House sync connected to SyncStation】

Connect your video devices to the sync signal similarly.

The SyncStation can generate and distribute a word clock to use as a master, but if you have a separate master word clock, connect that to the SyncStation.

Connect your video devices and SyncStation to transmit SMPTE timecode as well.

If you have video equipment that uses a 9-pin machine control, connect the video recorder and SyncStation with a 9-pin D-sub cable. If the machine control uses MMC, connect with a MIDI cable.

Connect the computers and SyncStation with USB cables. Driver installation is discussed later on.

Connect any GPIO-based devices or other equipment as needed.

About Extended System Link

Expanded System Link is SyncStation's proprietary protocol expanding on Steinberg's VST System Link. After connecting a computer running NUENDO with a SyncStation over USB, the Nuage I/O and SyncStation are connected, and Expanded System Link lets you exchange sample-level position information between audio (audio system) and video (synchronizer). Expanded system link requires one digital-signal channel. The SyncStation has two types of 2-channel AES (XLR, BNC), and two types of S/PDIF (optical, coaxial) interfaces; the Nuage I/O's VST System Link output uses BNC, so if you are using AES2, connect one BNC cable.

【SyncStation Digital Inputs】

【Nuage I/O System Link Out】

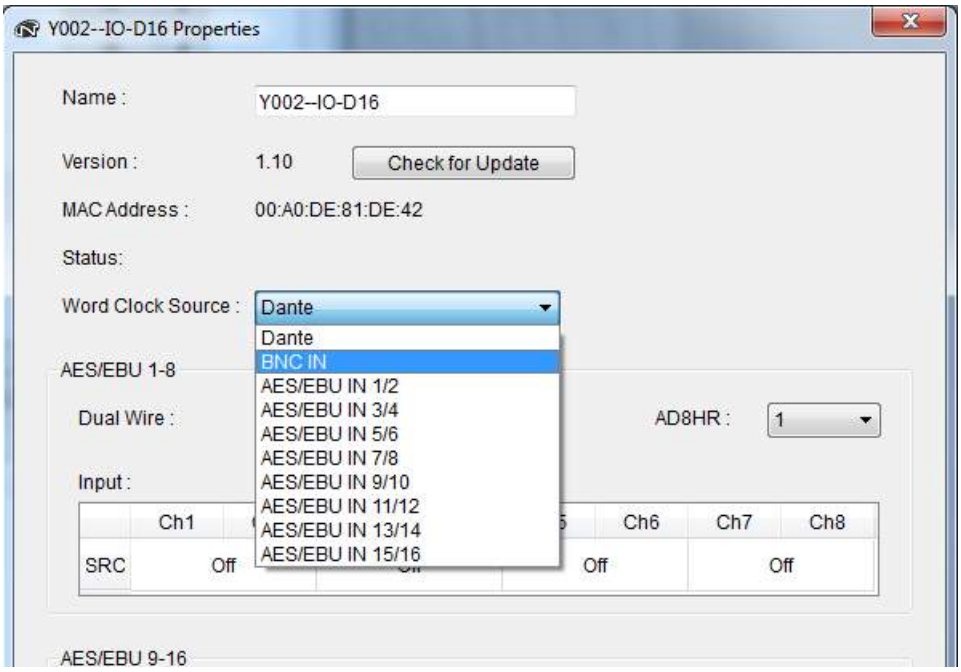
TIPS：
When using multiple Nuage I/Os, simply connecting the Extended System Link output from one of them to the AES2 input on the SyncStation will provide sample syncing on all the Nuage I/Os. You can select a channel for the Expanded System Link on the NUENDO's VST Connections, as discussed later on, but take special note that under current specifications, this requires that you select two channels at a time. Also note that because you can use digital channels (two at a time) patched to Expanded System Link as audio channels, you don't end up wasting scarce audio channels, and can use them more efficiently.

4-7. Wordclock Connections

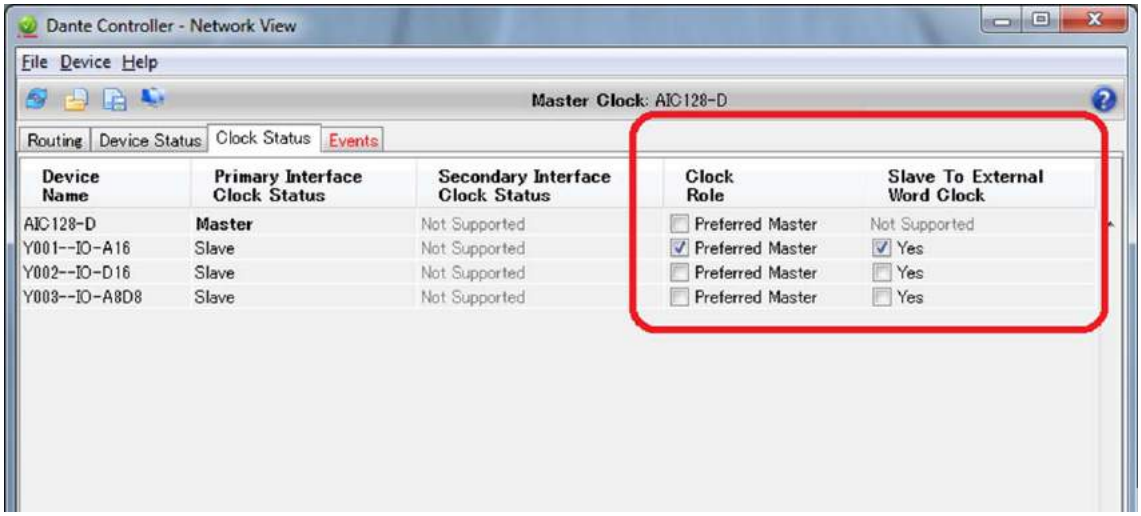
Workdclock signals output from the clock master device will need to be distributed to each of the following digital audio devices

- Nuage I/O
- SyncStation
- Other digital audio devices such as CD player (if needed)

TIPS：
When multiple Nuage I/O units are used, apply the same wordclock signal to each unit. If that's the case, choose "BNC IN" as Wordclock Source on the Nuage Workgroup Manager, and also make sure you turn both "Preferred Master" and "Slave To External Word Clock" on the Dante Controller's Clock on for only one of the Nuage I/O units, and turn them off for the other units.



【Nuage Workgroup Manager NIO Properties】



【Dante Controller Clock Status window】

5. Installing software and drivers

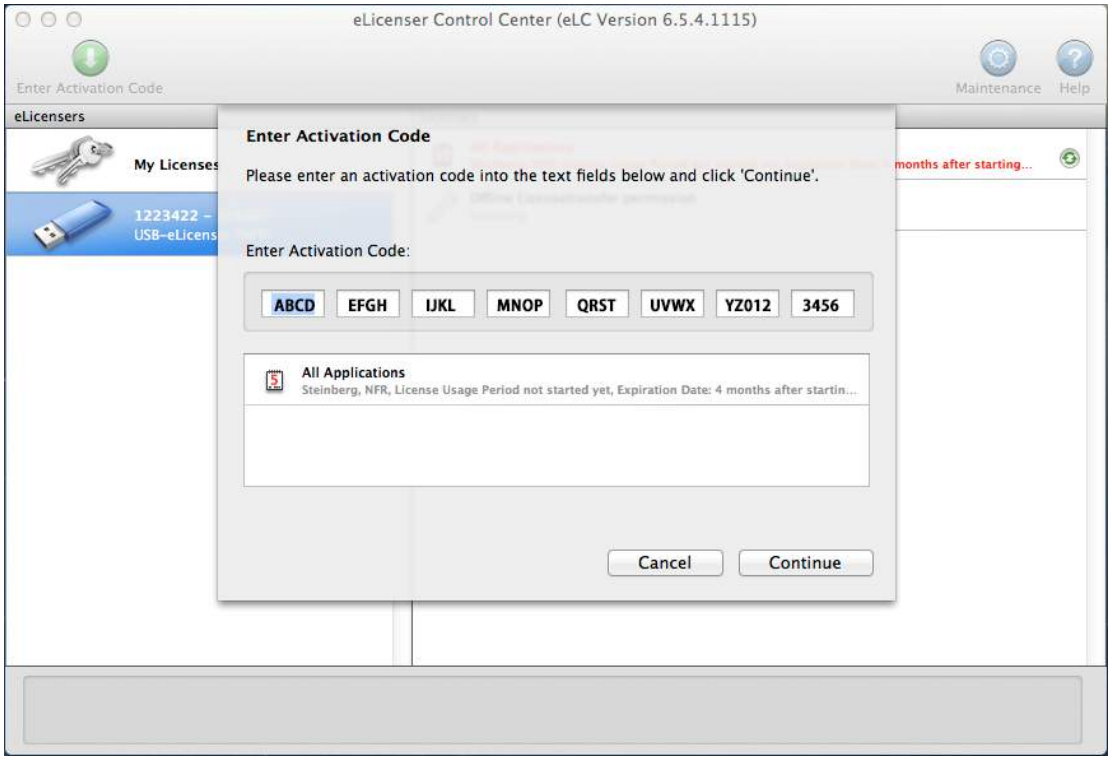
For current software/driver compatibility list, please refer to the following page:
http://www.yamahaproaudio.com/global/en/products/daw_systems/nuage/downloads.jsp

5-1. Installing the eLicenser Control Center

The eLicenser Control Center (eLCC) is software from Steinberg for managing licenses and enforcing copy protection, using either the USB eLicenser (included in the NUENDO/Cubase package) or the soft eLicenser.

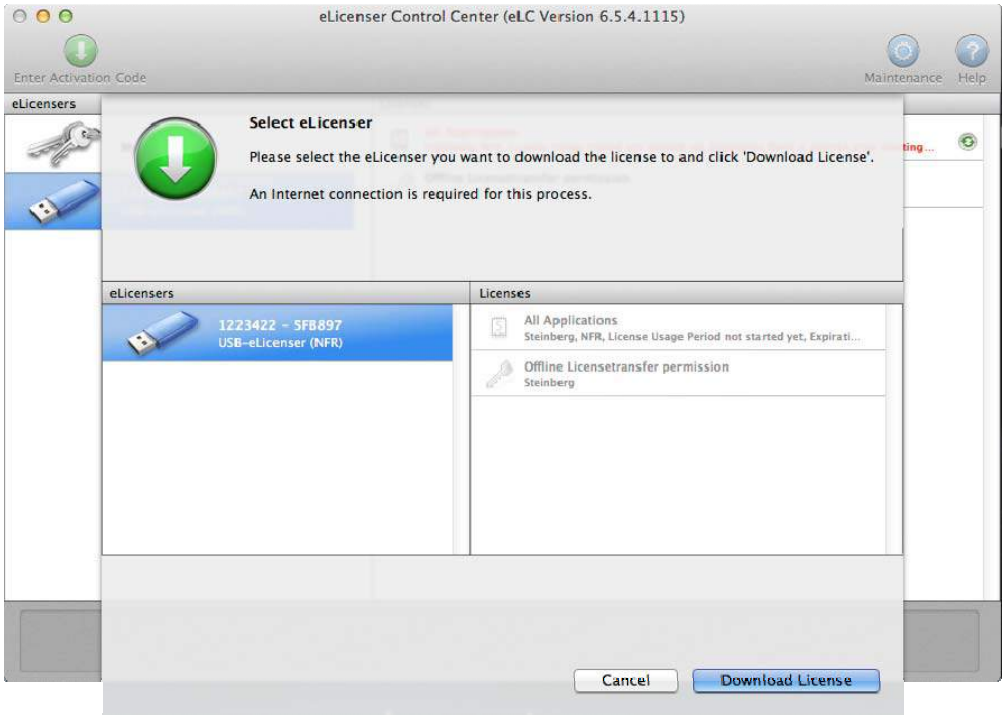
【Steinberg USB-eLicenser】

Begin by downloading eLCC from Steinberg's website and installing it.
http://www.elicenser.net/en/latest_downloads.html
Once installation is complete, launch eLCC.
Click the "Enter Activation Code" button and type in the 32-character activation code for NUENDO.

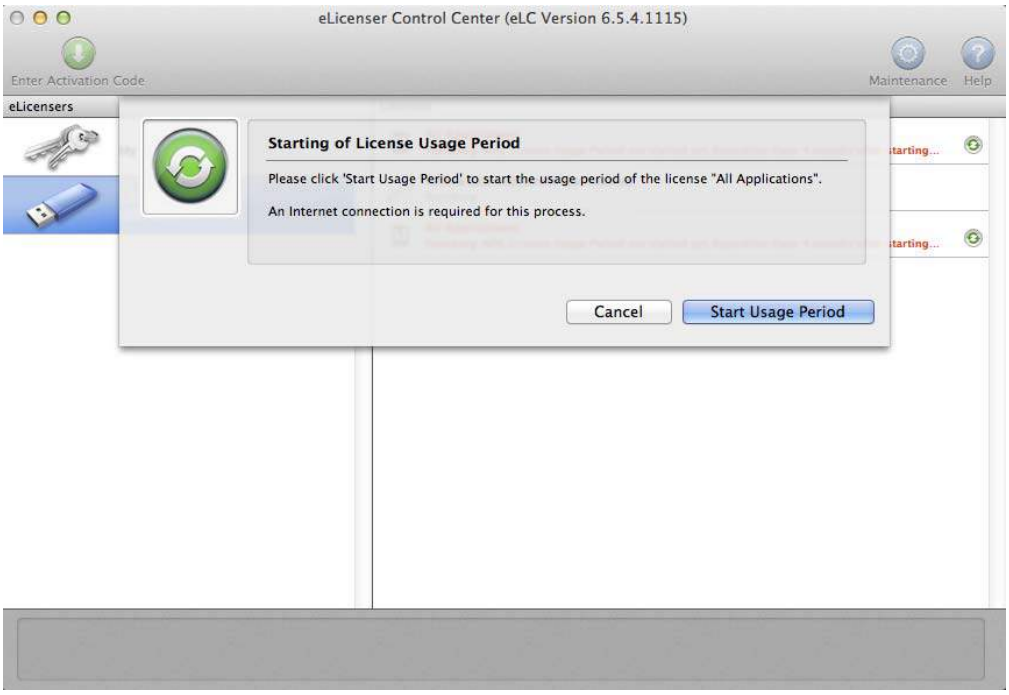


【Steinberg eLicense Control Center (sample screen)】

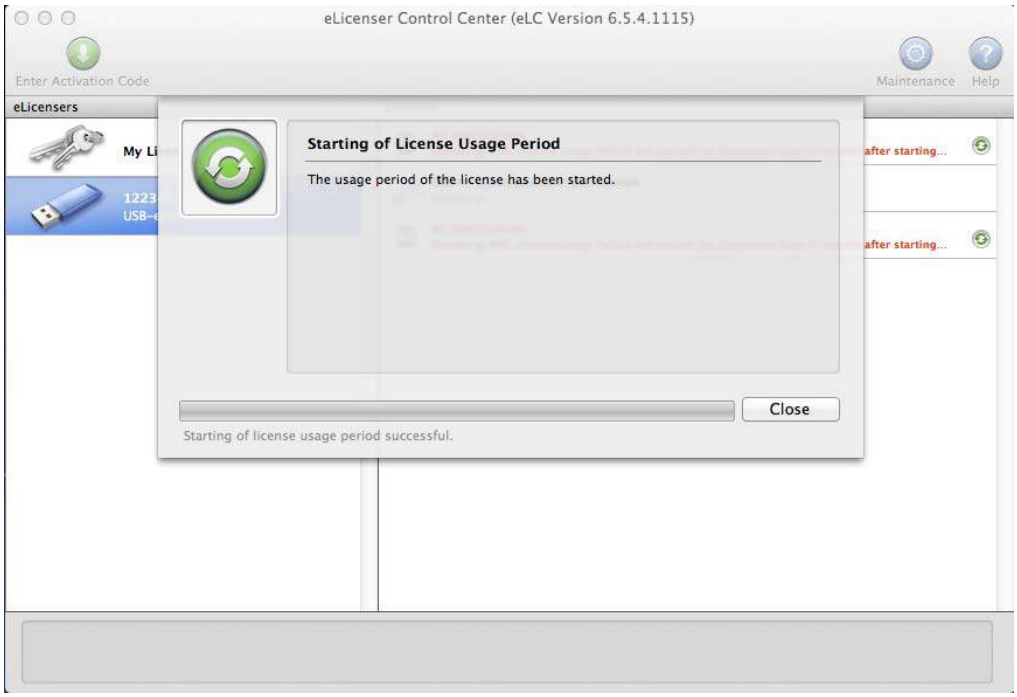
Once you have correctly entered the code, the license will be downloaded; select the eLicenser to which you want the license to be downloaded, and click the “Download License” button.



Simply downloading the license does not actually make the software available for use, so start the usage period.

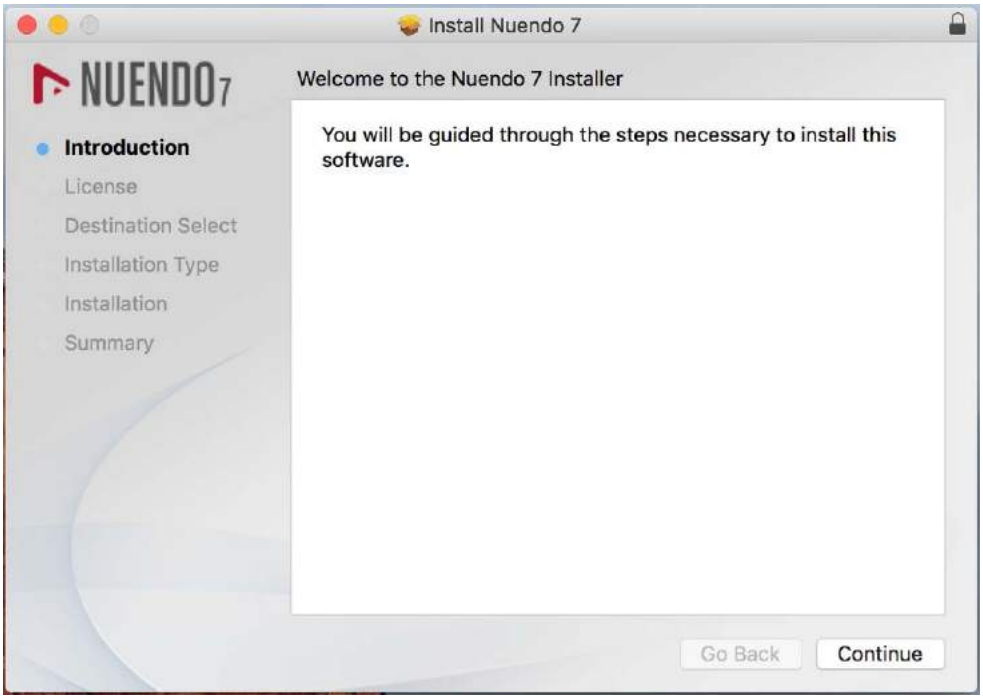


When you see the screen shown below, the eLicenser is working.

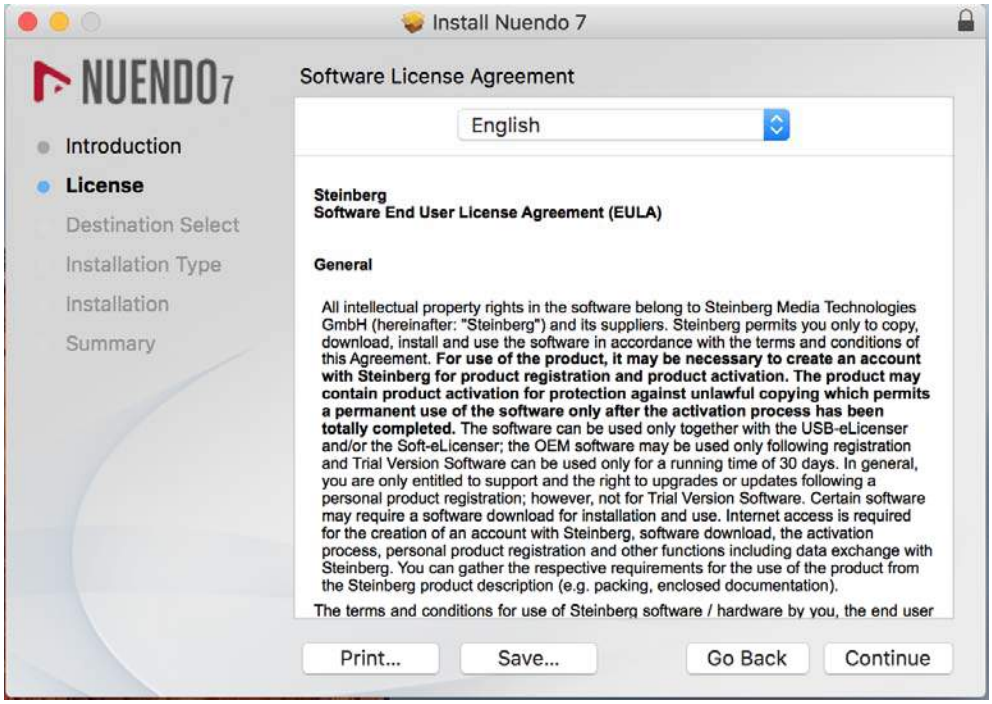


5-2. Installing NUENDO

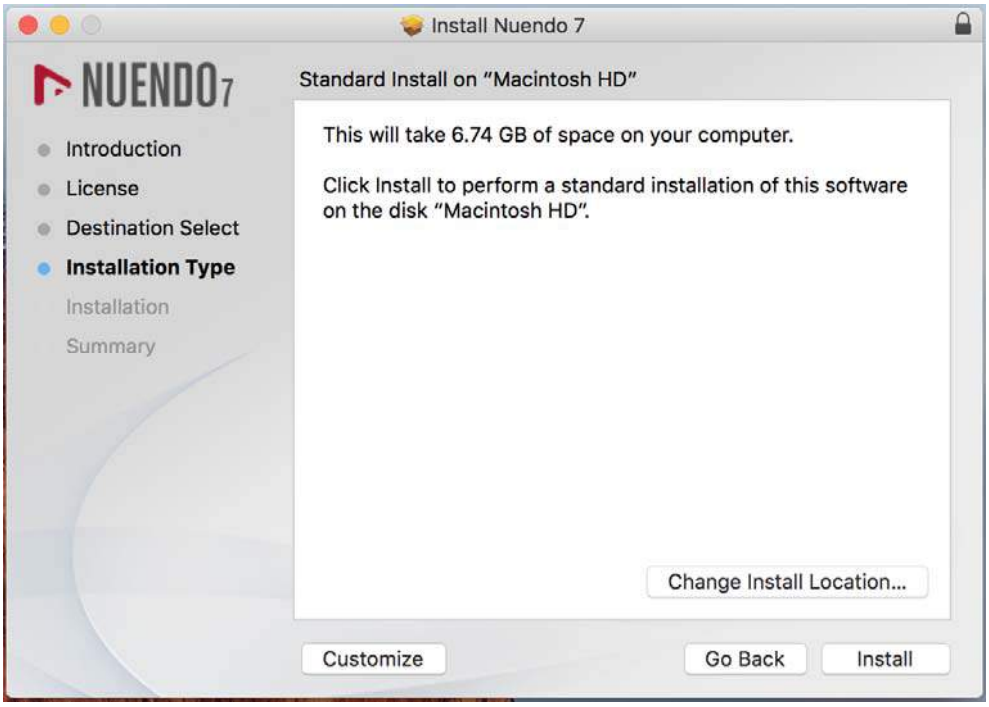
Next, launch the installer to install NUENDO. Follow the steps in the installation window.



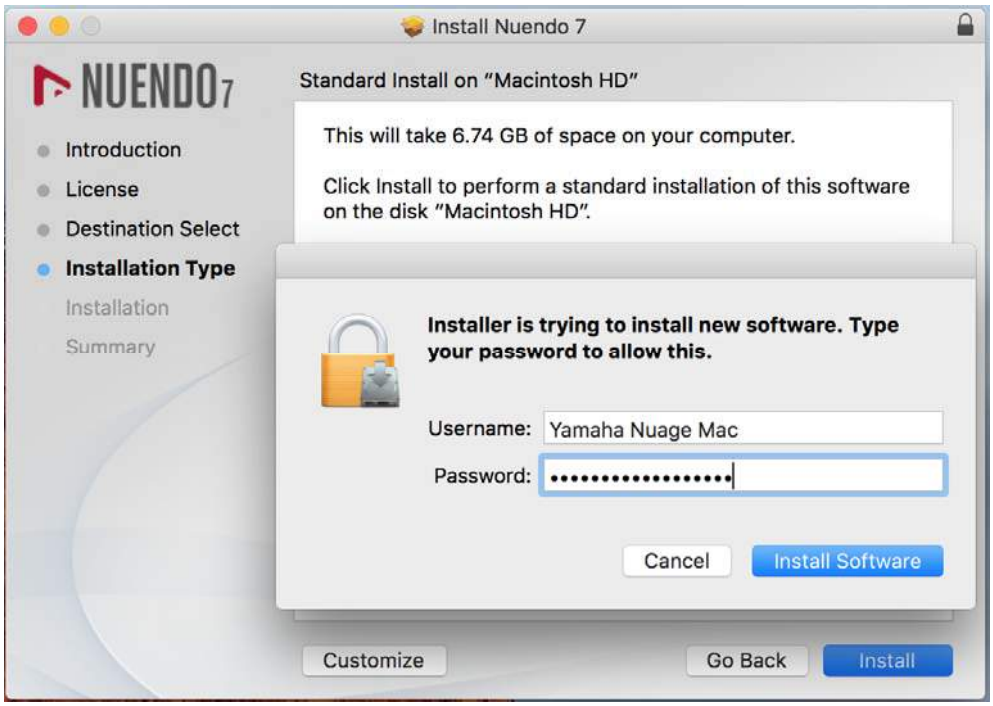
【NUENDO Installer】



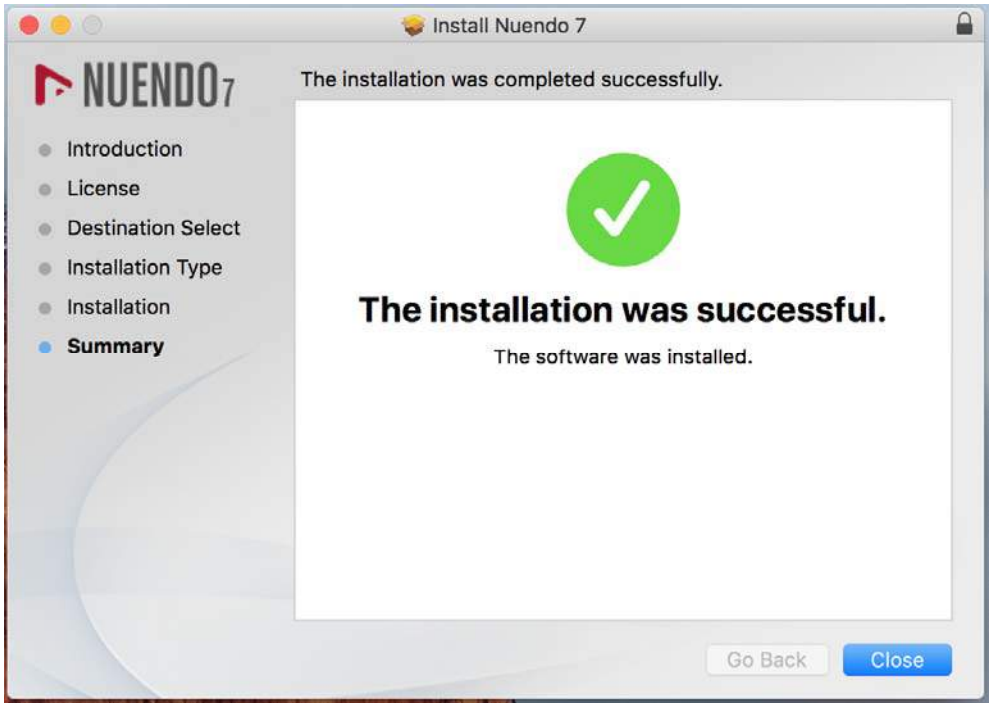
【Software License Agreement】



【Choose Install Location】



【Enter Password to Proceed】



【Installation Completed】

Installation of NUENDO is now complete.

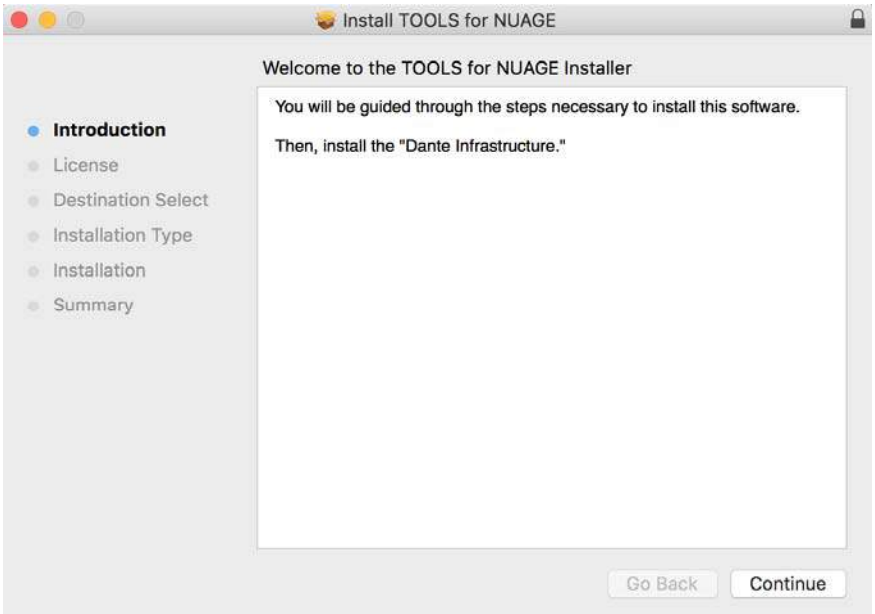
TIPS：
After installing NUENDO from DVD, it is necessary to download the latest updater from Steinberg website and install the version after v6.0.3. It is possible that the NAUGE doesn't work properly if the version is not up to date, so please update.

5-3. Installing Tools for Nuage

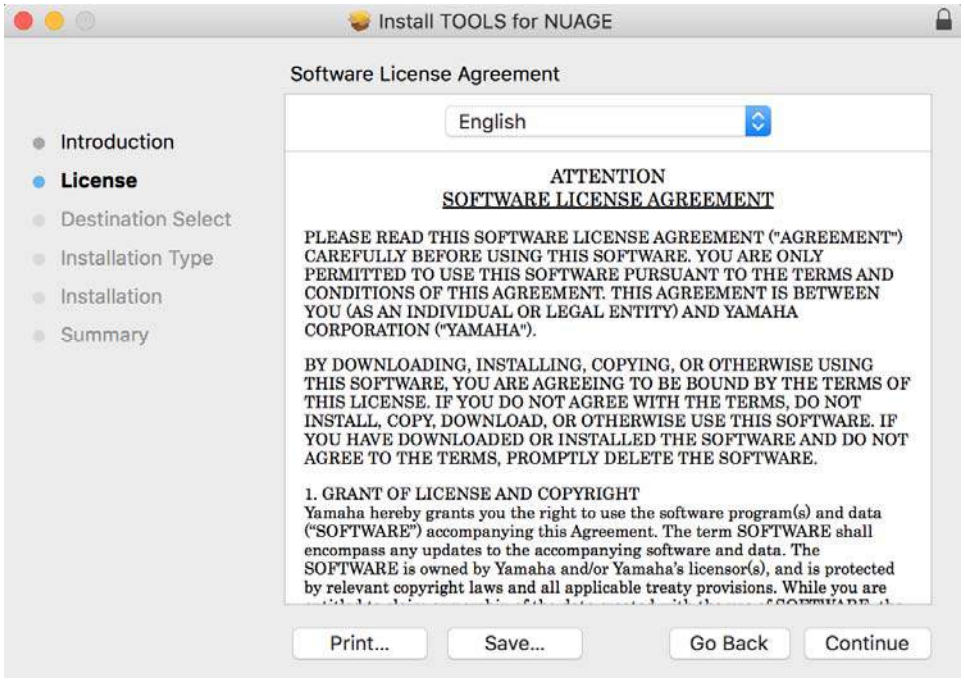
Tools for Nuage bundles into one package all the various applications and drivers that Nuage needs, including Nuage Workgroup Manager, for managing Nuage systems; Nuage Extension for communications between NUENDO and Nuage; and Nuage PT Bridge, driver software that connects to third-party DAWs and switches Nuage controllers. Please download the latest version of Tools for Nuage from the Yamaha Pro Audio website (http://www.yamahaproaudio.com/) and install it.

【TOOLS for NUAGE Installer image file】

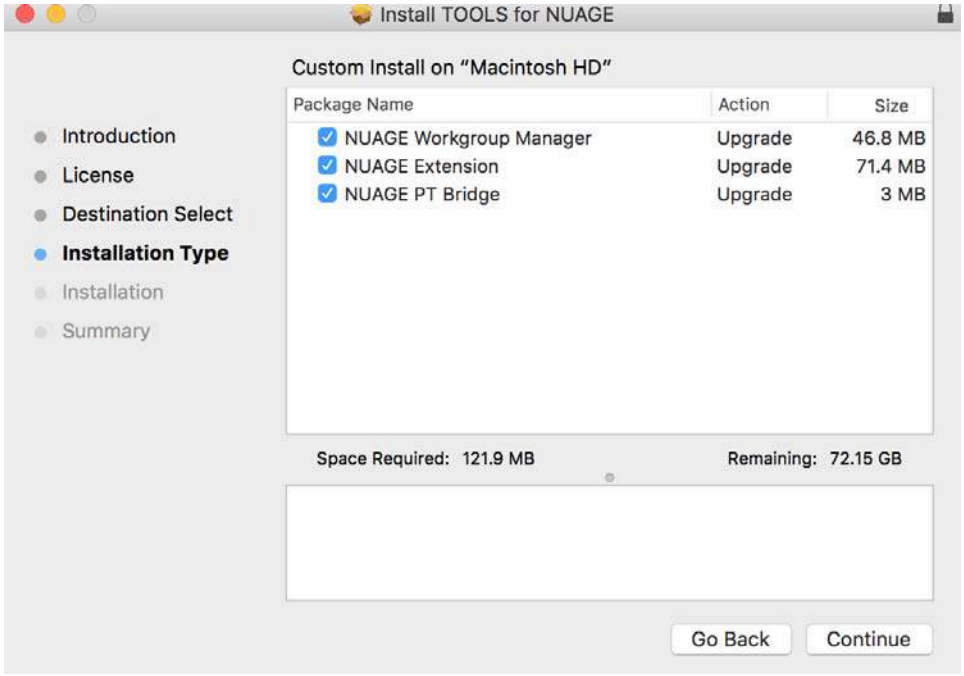
Follow the steps in the installation window.



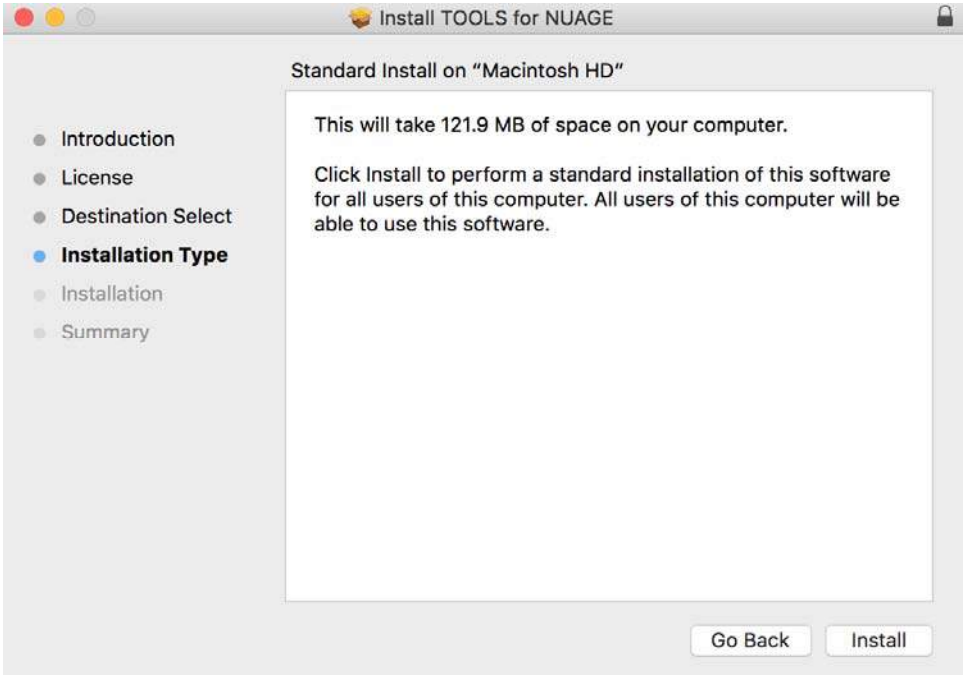
【TOOLS for NUAGE Installer】



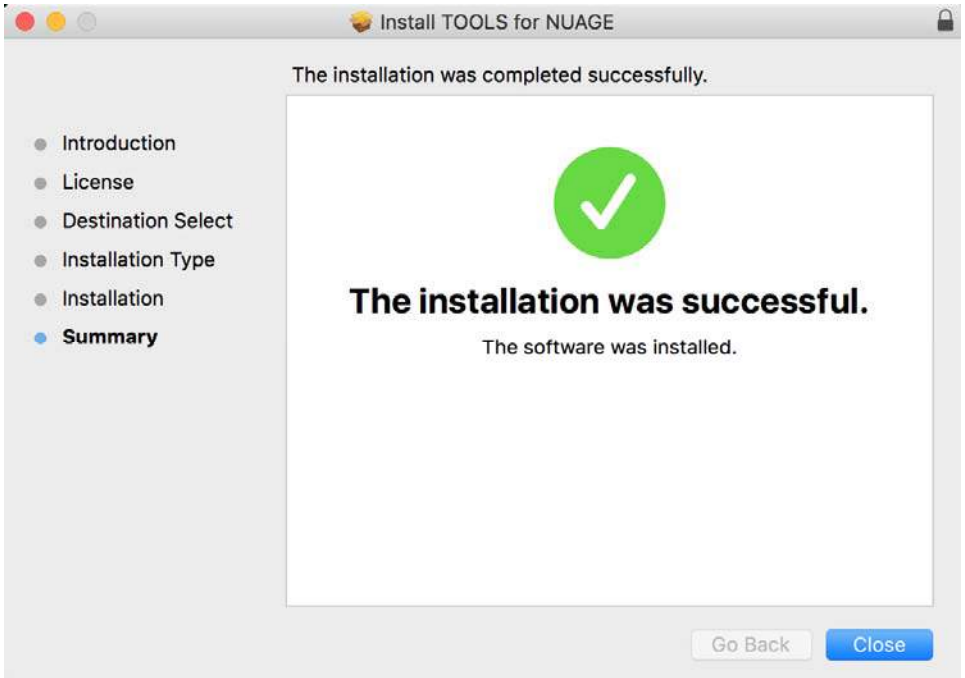
【Software License Agreement】



【Choose Programs To Be Installed】

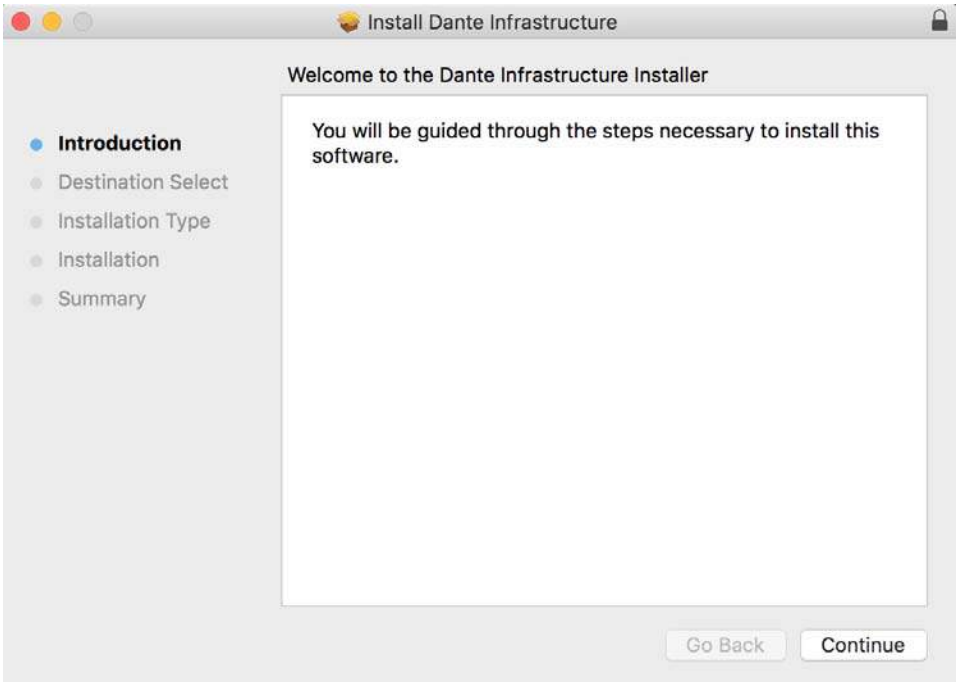


【Check Disk Space and Start Installation (Password Required)】

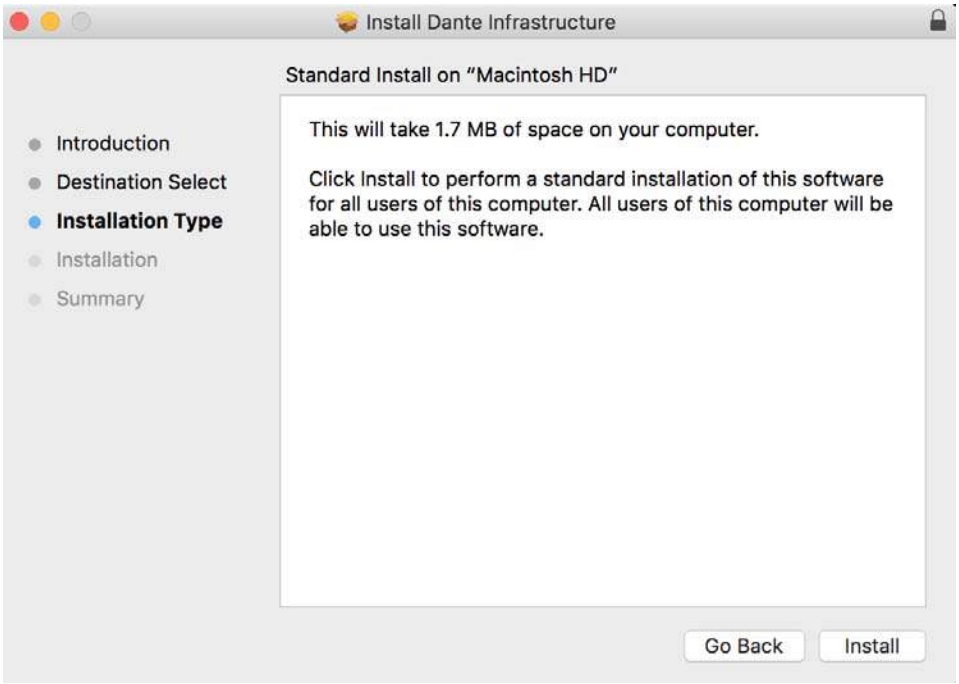


【Installations Completed】

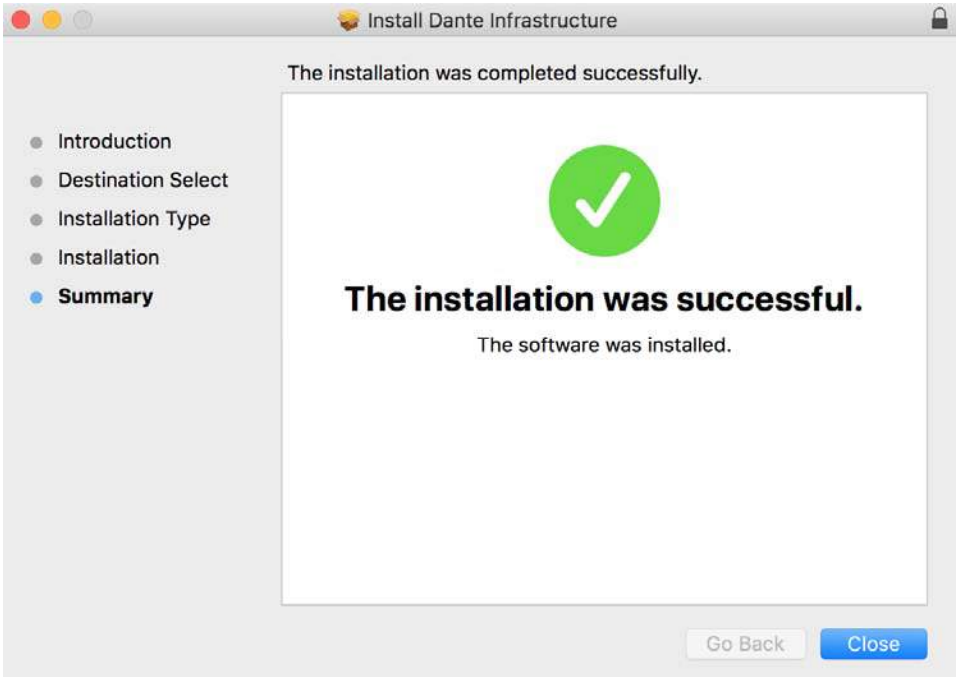
Next, move on to Dante Infrastructure installation.



【Dante Infrastructure Installer】

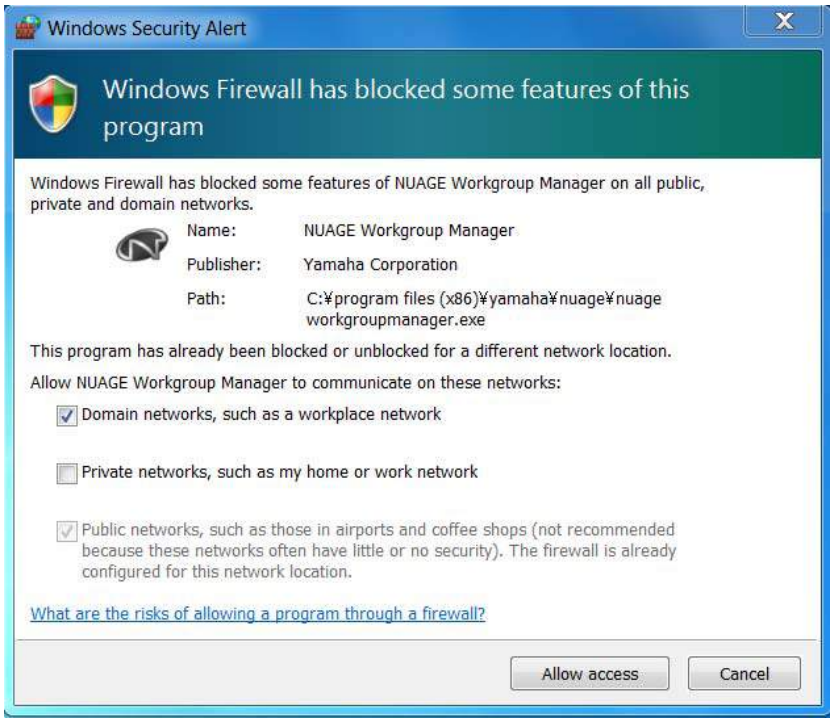


【Installation Type】



【Installation Completed】

For Windows, after installing TOOLS for NUAGE, the firewall setting for Nuage Workgroup Manager will pop up, allow the following access settings.



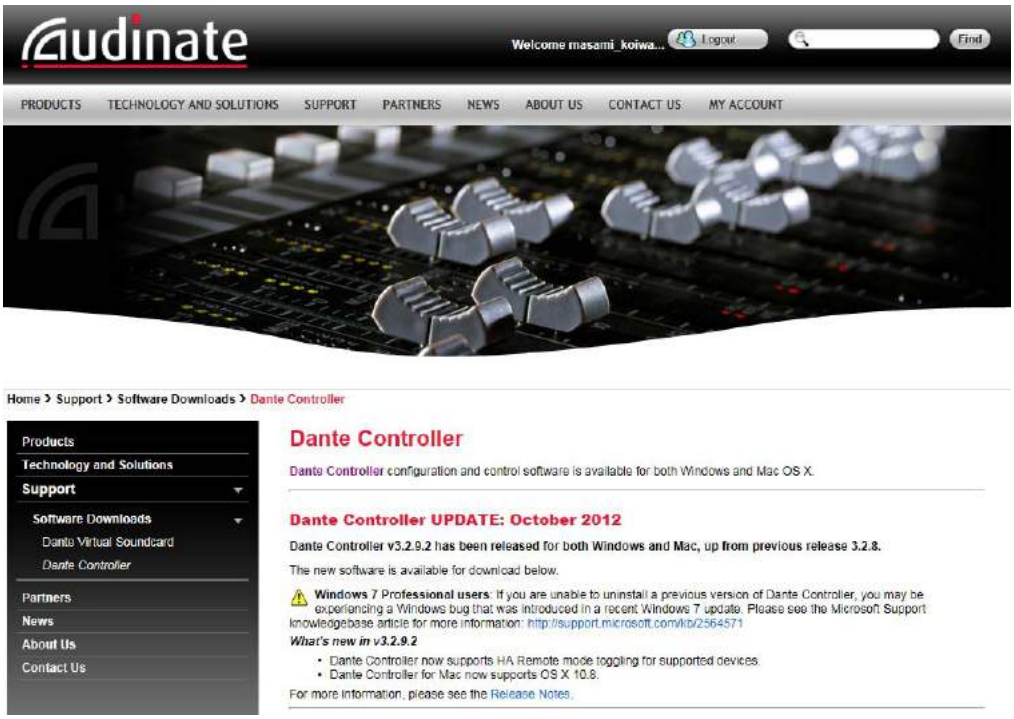
【Windows Security Alert】

TIPS：

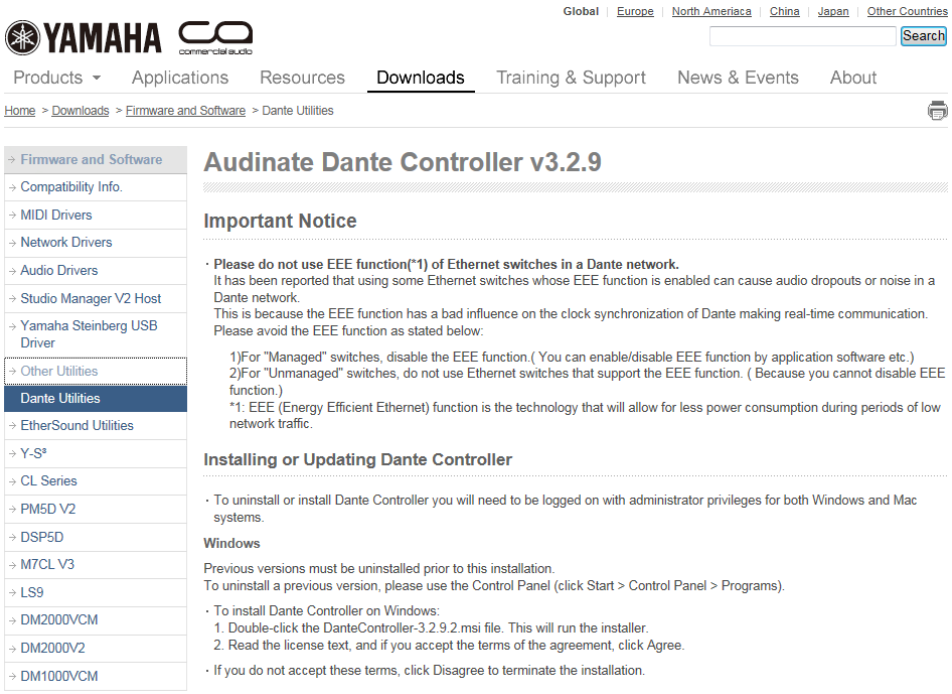
Only one Workgroup Manager is needed to be installed and started up for Nuage system. For example, If Workgroup Manager is already installed for DAW A, it is not necessary to install it again. If it is necessary to install Extension and Nuage PT Bridge for Mac, uncheck the Workgroup Manager from the installation options mentioned above and continue.

5-4. Installing Dante Controller

Download Dante Controller from either the Audinate website (www.audinate.com) or from the Yamaha Pro Audio website (http://www.yamahaproaudio.com/).



【Audinate Website (registration required)】



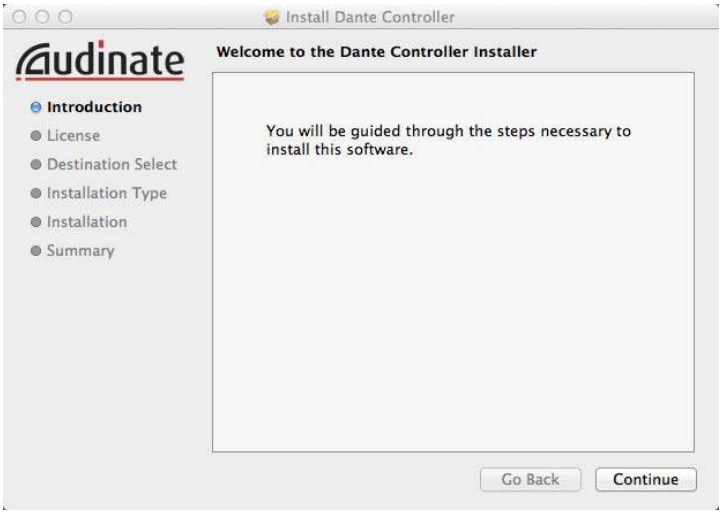
【Yamaha Pro Audio Website (Downloads->Other Utilities->Dante Utilities)】

If the following window appears when you attempt to install Dante Controller on a Macintosh by double-clicking on the installer icon, you will not be able to install it. This is because of a feature in Mac OS X called Gatekeeper. The easiest way to circumvent this is to hold down the Control key and click on the installer icon, and then select Open. A warning message will appear: click on the "Open" button to run the installer.

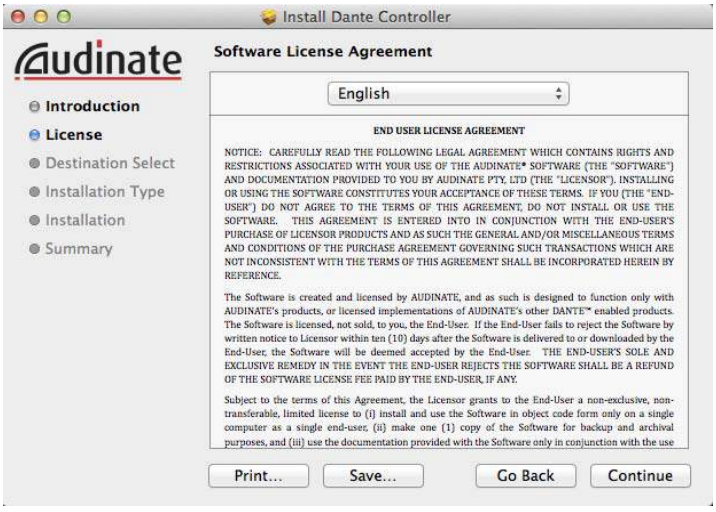
【Gatekeeper Alert】

【Open with Ctrl Key】

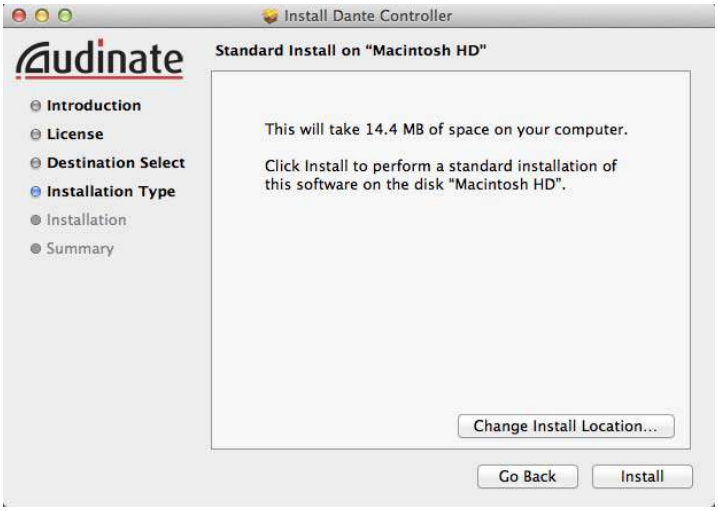
If this happens when installing NUENDO, you can circumvent it in the same way.



【Dante Controller Installer】

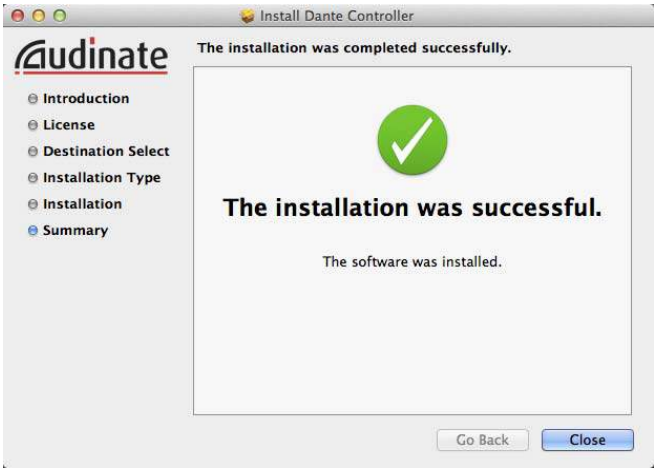


【Software License Agreement】



【Choose Install Location】

【Enter Password to proceed】



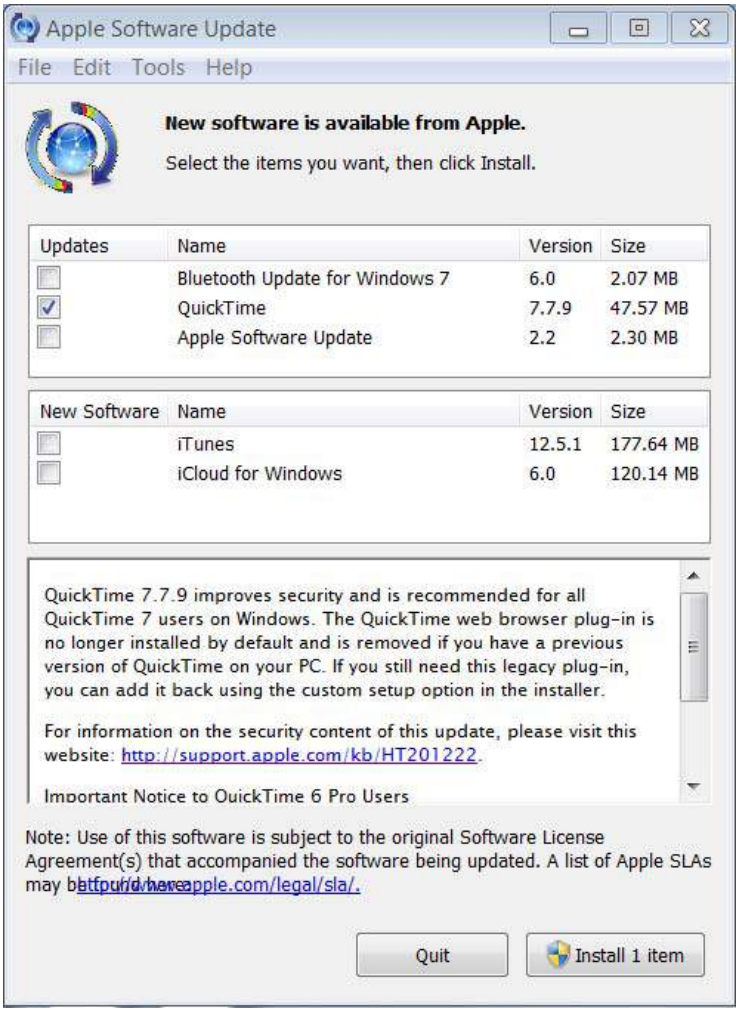
【Installation Completed】

5-5. Installing QuickTime 7.7.9 from Apple Software Update (For Windows only)

NUENDO has video tracks, allow to import video file as video reference for audio playback, recording and editing. And for this, QuickTime technology from Apple is used as video engine. QuickTime is being installed on Mac OSX as default, but it may not be installed as default in case of Windows, so please make sure to install the latest version of QuickTime Essentials. You may download QuickTime 7.7.9 for Windows via Apple Software Update.

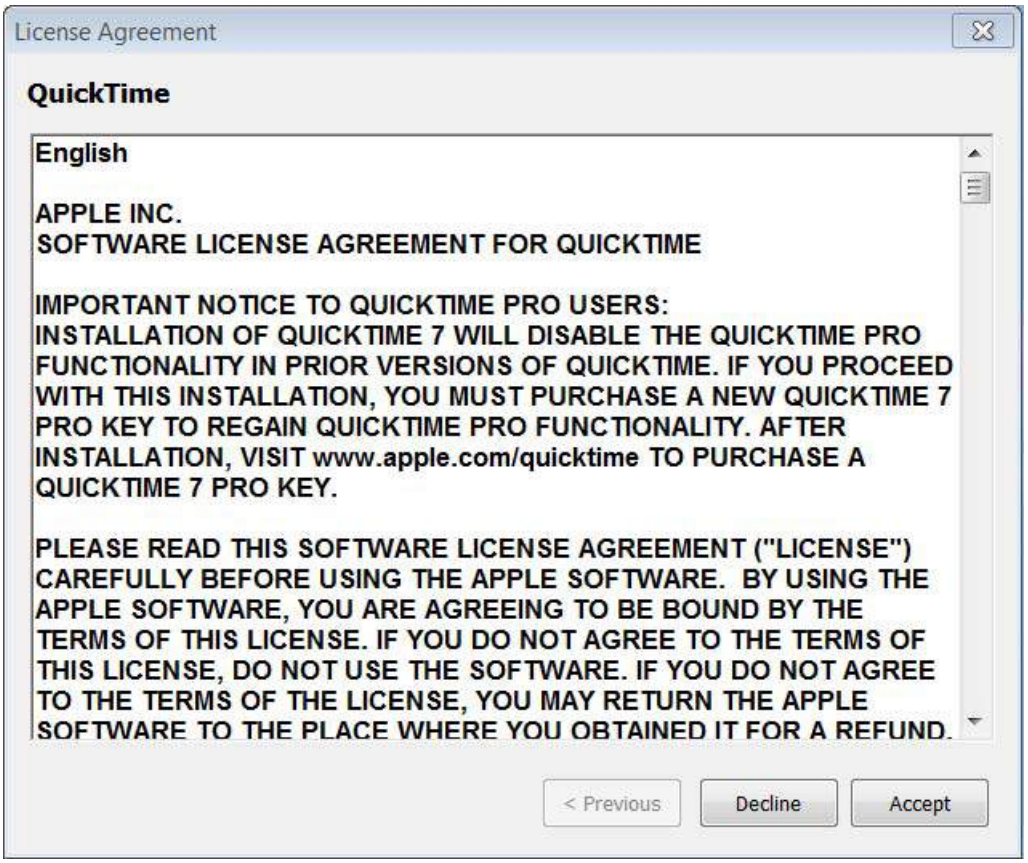
TIPS：

Official support for QuickTime for Windows has already been discontinued, and it is recommended that the previous version of QuickTime Player is updated to the latest version, since there was a serious security issues with the latest versions older than QuickTime 7.7.9.

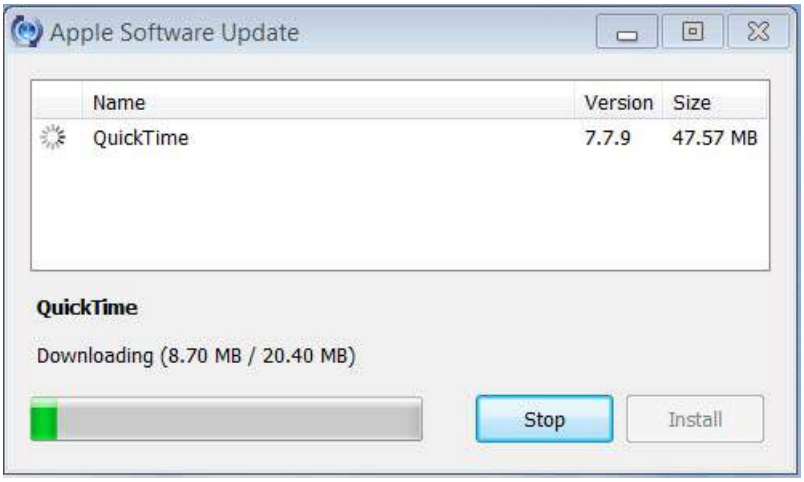


【Apple Software Update to install QuickTime 7.7.9】

Follow the steps in the installation window.



【License Agreement】



【Downloading QuickTime 7.7.9】

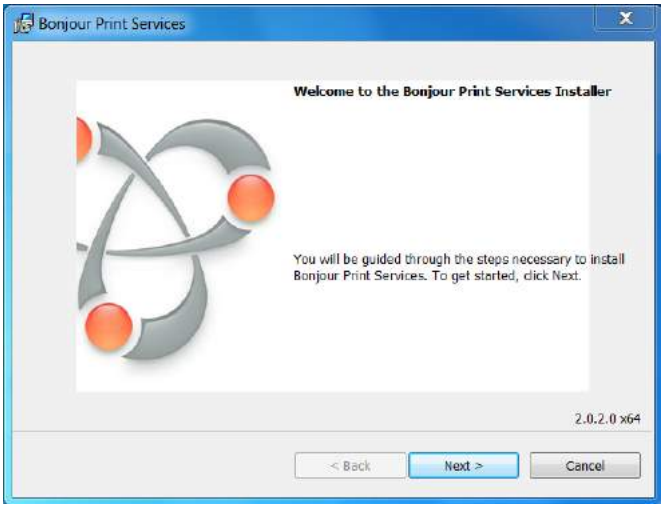
【Installation Completed】

5-6. Installing Bonjour (For Windows only)

Dante Controller assumes that Bonjour is available. This is included by default with Mac OS X—only Windows users will need to install Bonjour.

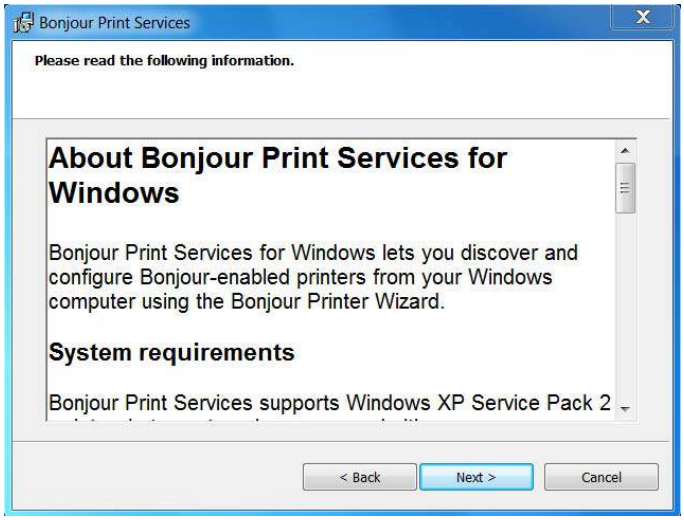
Bonjour can be downloaded from Apple's website. http://support.apple.com/kb/DL999

Follow the steps in the installation window.

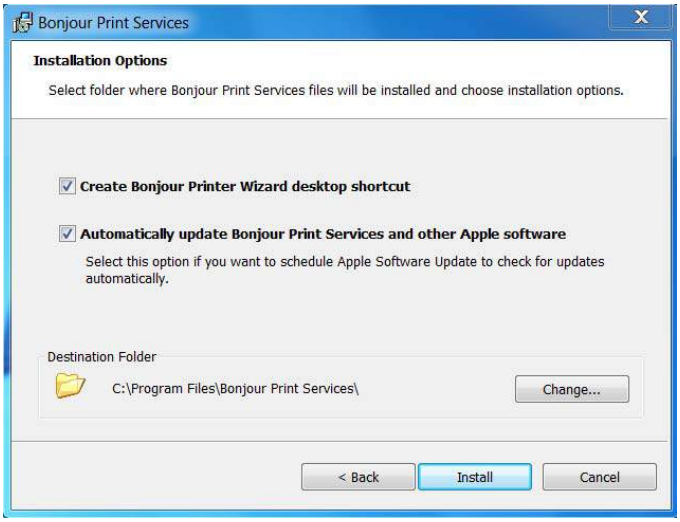


【Bonjour Installer】

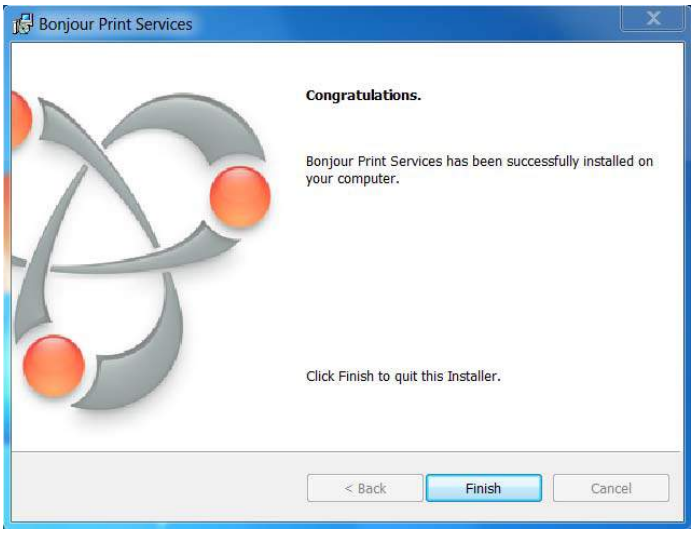
【License Agreement】



【System Requirements etc.】



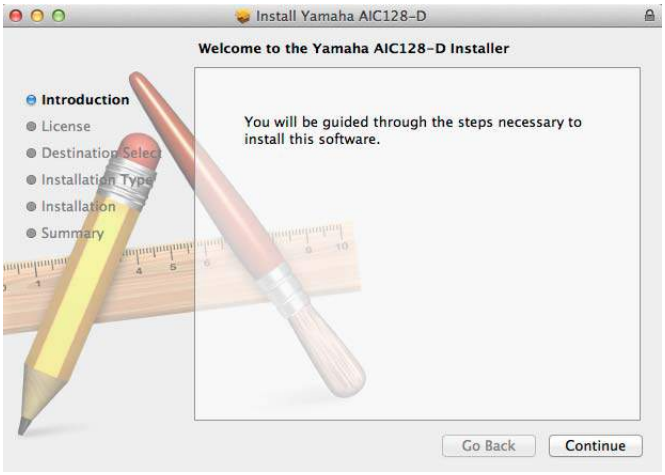
【Installation Options】



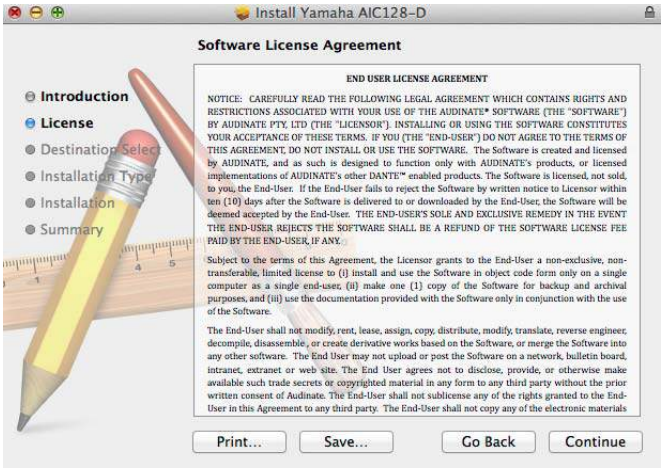
【Installation Completed】

5-7. Installing the driver for Dante Accelerator

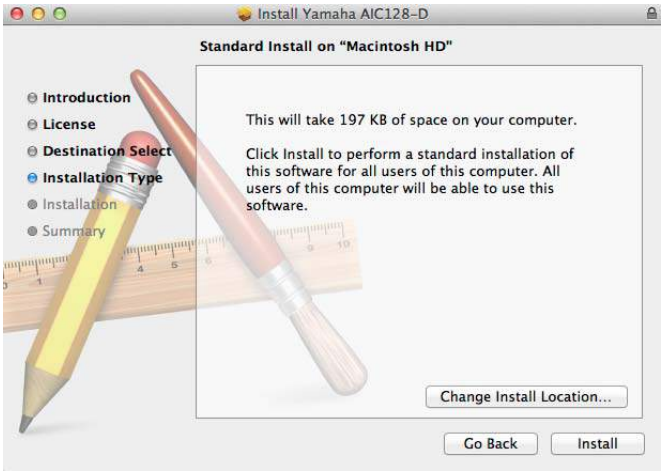
Next, download the driver for Dante Accelerator from the Yamaha Pro Audio website (http://www.yamahaproaudio.com/) and run the installer.



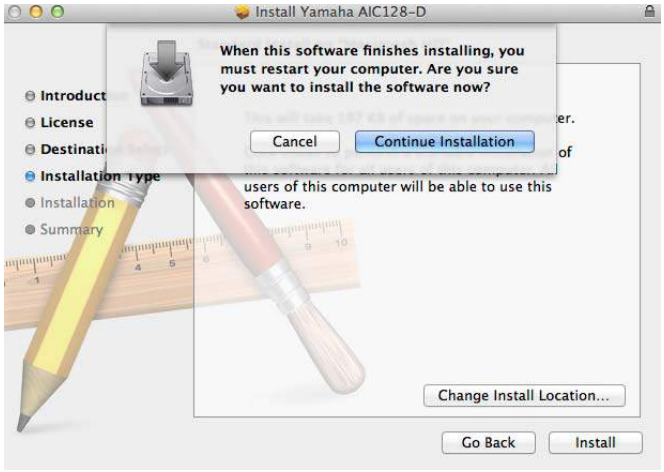
【Dante Accelerator Installer】



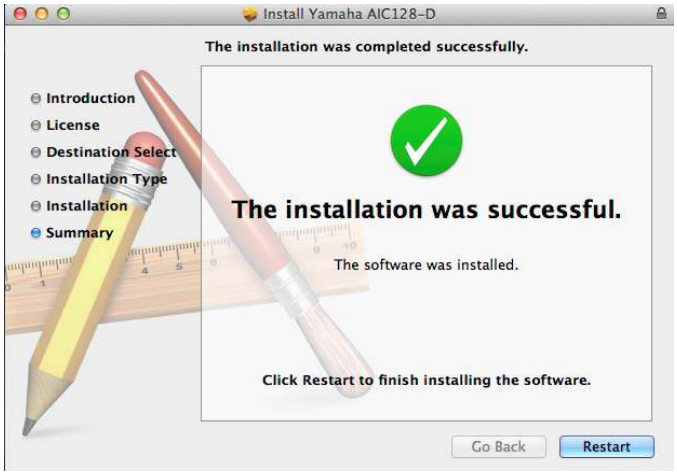
【Software License Agreement】



【Choose Install Location】



【Rebooting Required After Installation】

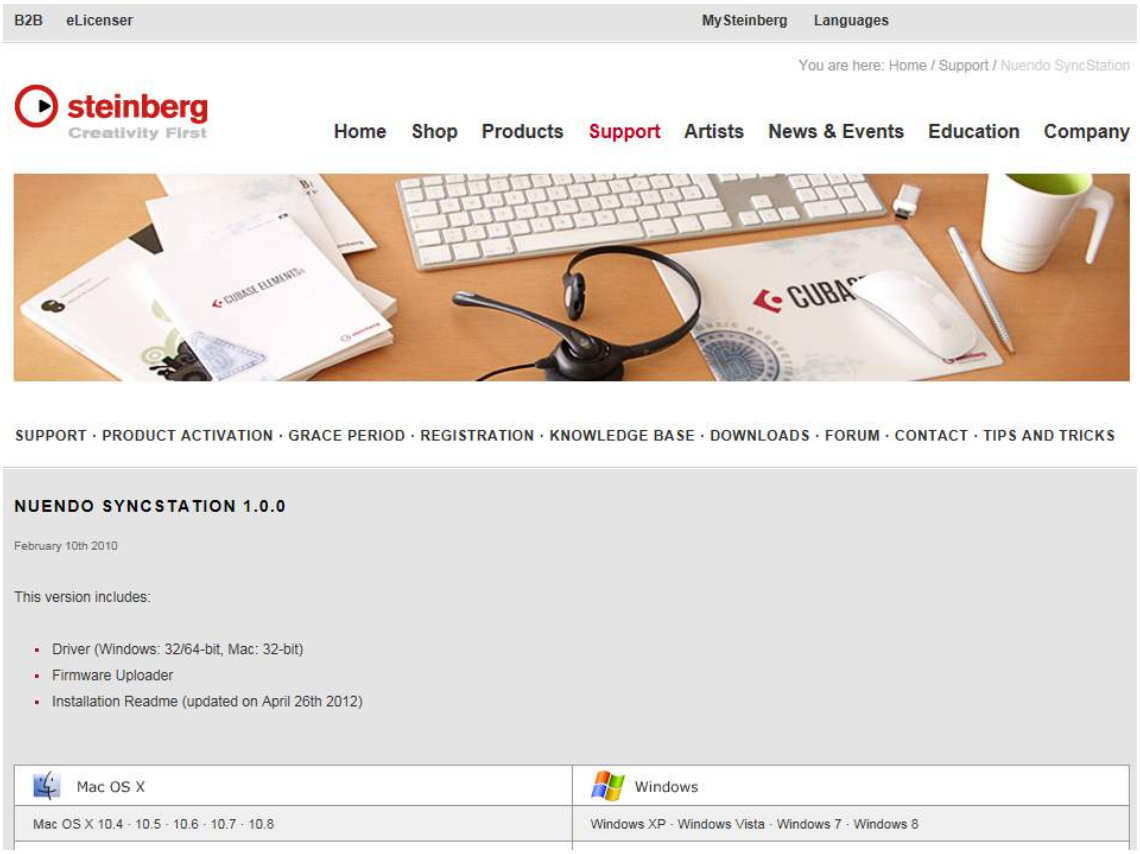


【Installation Completed (and Reboot)】

5-8. Installing the driver for SyncStation

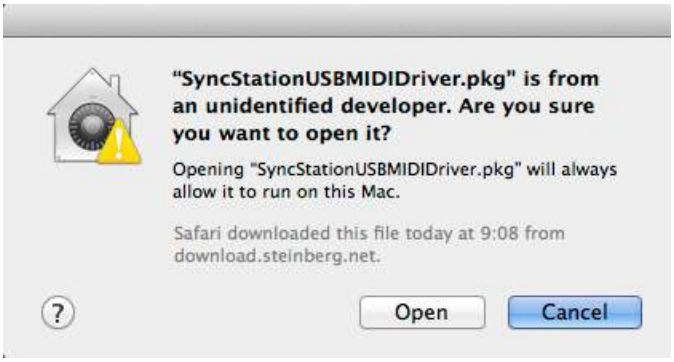
Download the latest driver for SyncStation from the Steinberg website and run the installer.

http://www.steinberg.net/en/support/downloads_hardware/downloads_NUENDO_syncstation.html



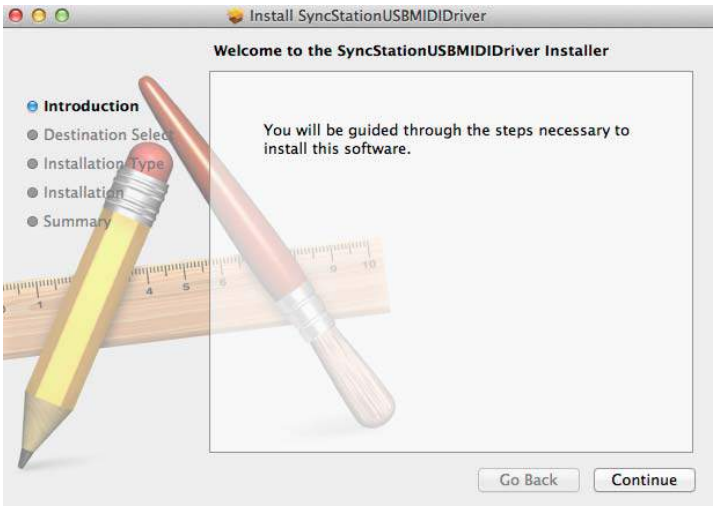
From this point on, download what is shown below, and follow the instructions in the installer to perform the installation.

1. SyncStation driver and firmware uploader

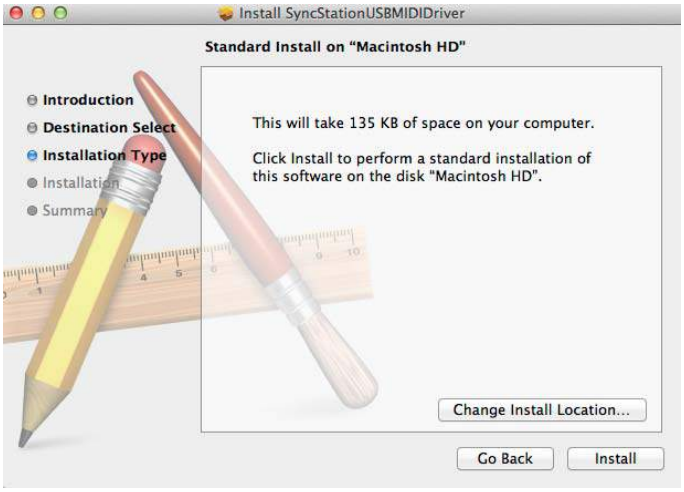


【Gatekeeper】

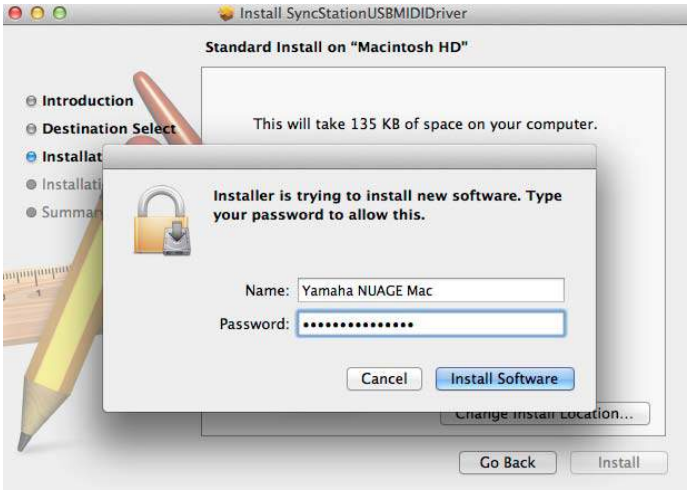
As described earlier, to bypass Gatekeeper, hold down the Control key, click on the installer icon, and select "Open."



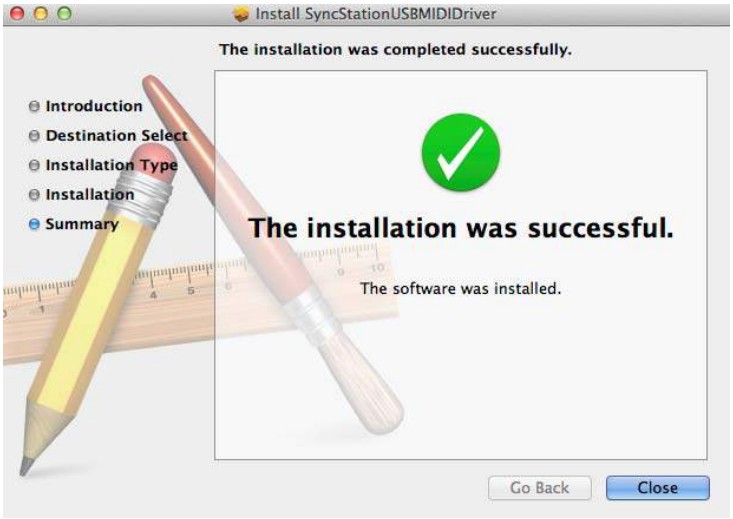
【SyncStation Driver Installer】



【Choose Install Location】



【Type Password to Proceed】



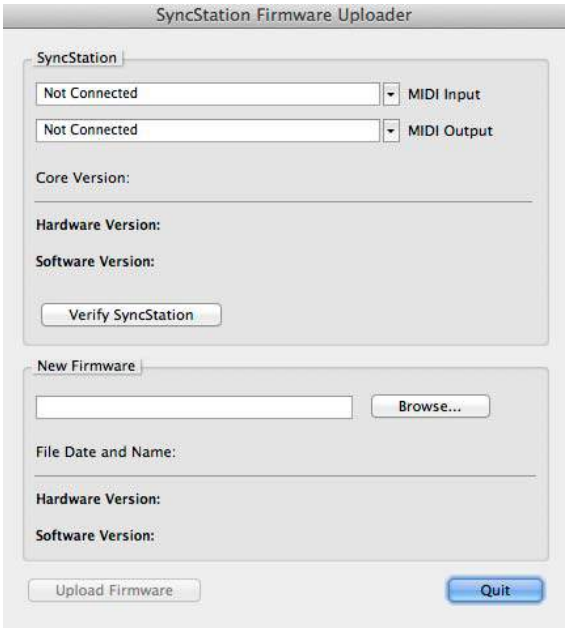
【Installation Completed】

2. Download latest firmware

While you do not need to install the firmware updater, you should keep the firmware on hand, so download the latest firmware (Firmware will be located at the same place as the driver). The file name and dot-extension for the downloaded file should be something like this:
syncstation-sw130123-hw120302.chf

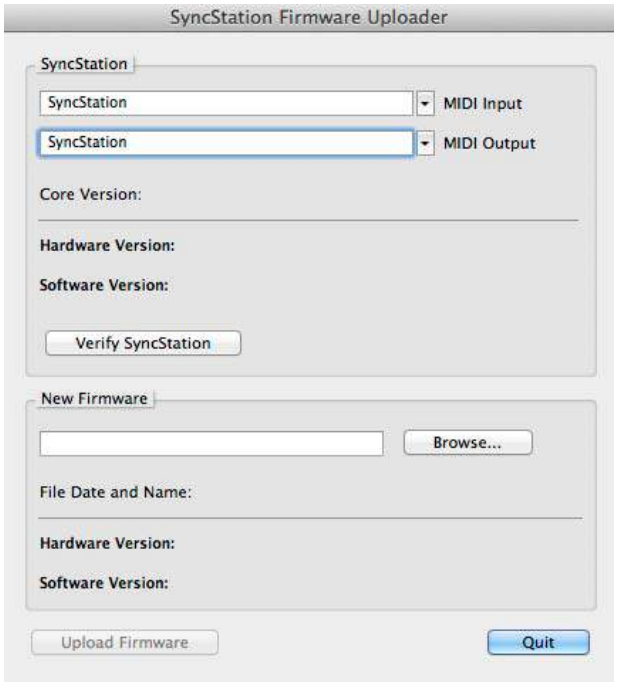
3. Launch the firmware updater and run the firmware update.

Launch the updater downloaded in Step 1 (SyncStation Firmware Updater).



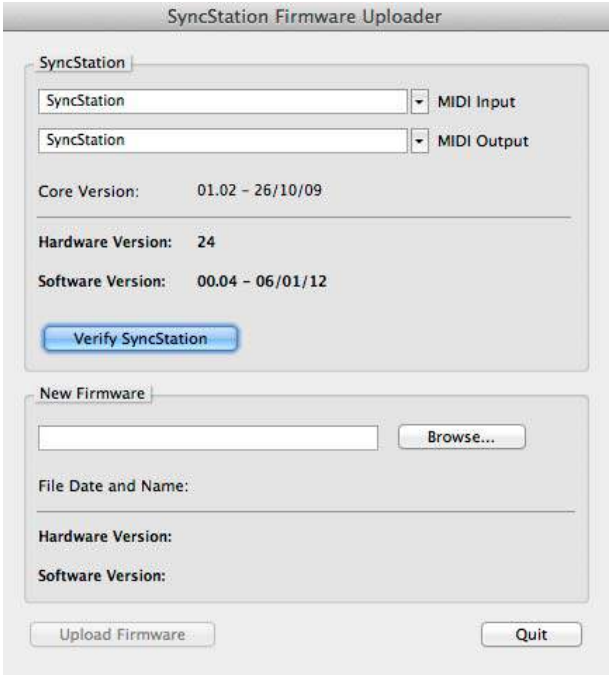
【SyncStation Firmware Updater】

Select “SyncStation” as the MIDI Input/MIDI Output ports.



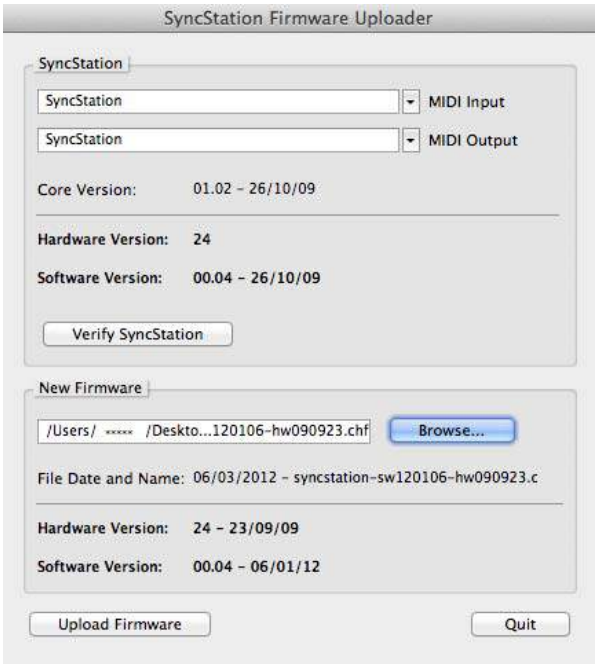
【Choose MIDI Ports】

Click “Verify SyncStation”; the SyncStation's current version information will be displayed.



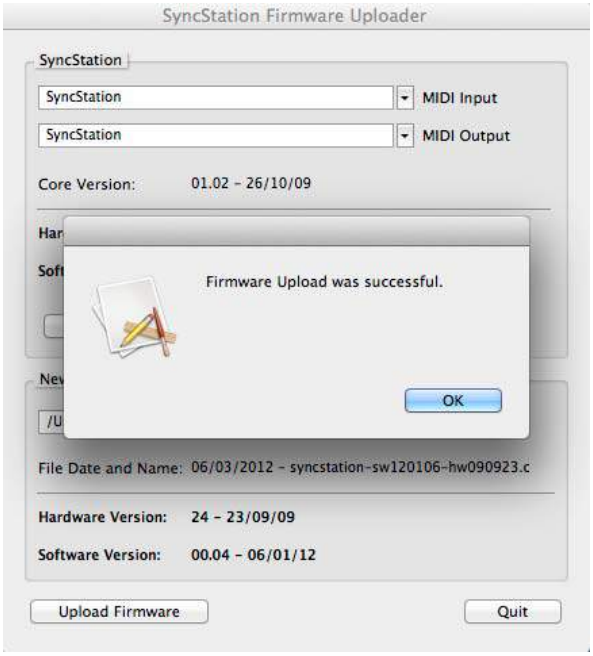
【Verify SyncStation Firmware Versions】

Next, navigate to the location of the latest firmware data (the .chf file), select it, confirm that it is the version to be used for the update, and begin the update.



【Specify New Firmware】

If the update finishes without incident, you will see the following message.



【Firmware Successfully Uploaded】

After uploading firmware, you should always perform a factory reset. Hold down the down-arrow button on the SyncStation to display the menu, and then press the down-arrow button repeatedly from the "Unit" line to open "Unit07-InstallTemplate", select "Factory," and hold down the down-arrow button.

【SyncStation Factory Reset】

Then turn the SyncStation off, wait for 5 seconds, and turn it back on.
The SyncStation update should now be complete.

6. Starting up & equipment settings

6-1. Sequence for equipment start-up

To avoid any hearing damage caused by loud noises when turning on equipment, follow the sequence shown below for starting up Nuage and other equipment.

1. Nuage controller (Nuage Fader/Nuage Master)
2. Computer monitors and computer peripherals
3. Computers
4. Video equipment, SyncStation, outboard gear
5. Nuage I/O
6. NUENDO
7. Powered speakers (or power amp)

When shutting off power, reverse the above order.

1. Powered speakers (or power amp)
2. NUENDO
3. Nuage I/O
4. Video equipment, SyncStation, outboard gear
5. Computers, computer monitors, and computer peripherals
6. Nuage controller (Nuage Fader/Nuage Master)

6-2. Starting up controller

Switch on the Nuage Fader/Nuage Master, in any order.

Tip:
The Nuage Controller has an “all-lit” mode for operational checks; when started up in “all-lit” mode, all buttons, LEDs, and other visual-feedback elements will be lit at maximum power. Holding down the DAW “A” and “B” buttons when turning it on and continuing to press them will put it into “all-lit” mode. To return it to normal mode, turn it off and back on again.

6-3. Starting up computer monitors and computer peripherals

Before turning on the computers, turn on the computer monitors and peripherals. Check again to ensure that the monitor power switches do not come in contact with the Nuage Controller, which might accidentally turn them off. Make sure if the Power Button Lockout mode is on.

6-4. Starting up computers

BIOS settings (with the HP Z series)

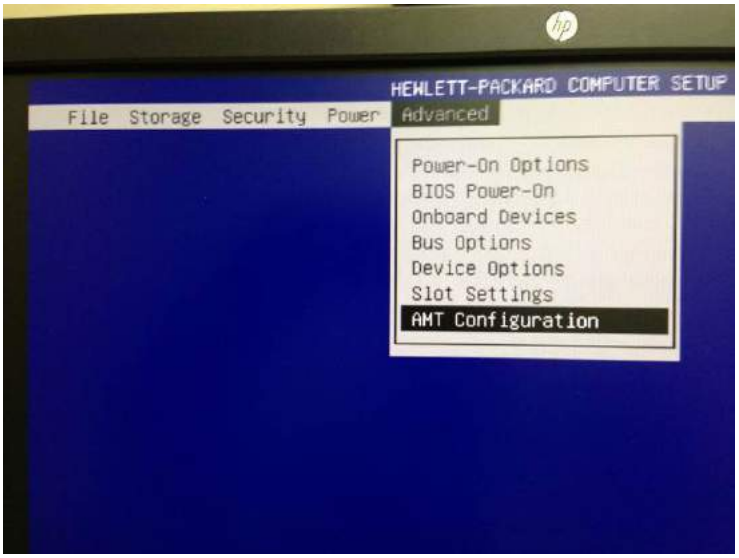
If you are using the HP Z840/Z440/Z240, switch AMT off in BIOS.

What is AMT?

AMT, or Active Management Technology, is Intel's remote-management function intended for client computers used in a corporate environment. This makes it possible to remotely start up and troubleshoot a computer. Nuage does not use this function, and moreover, because it periodically transmits data used for remote monitoring, that traffic can interfere with communications between the Nuage Controller and computers. This is why we recommend disabling AMT in BIOS. The Z820 is equipped with two networking ports, one of which, labelled "AMT" is specifically for AMT monitoring. But use this port after disabling AMT (because that port has better hardware performance than the other.)

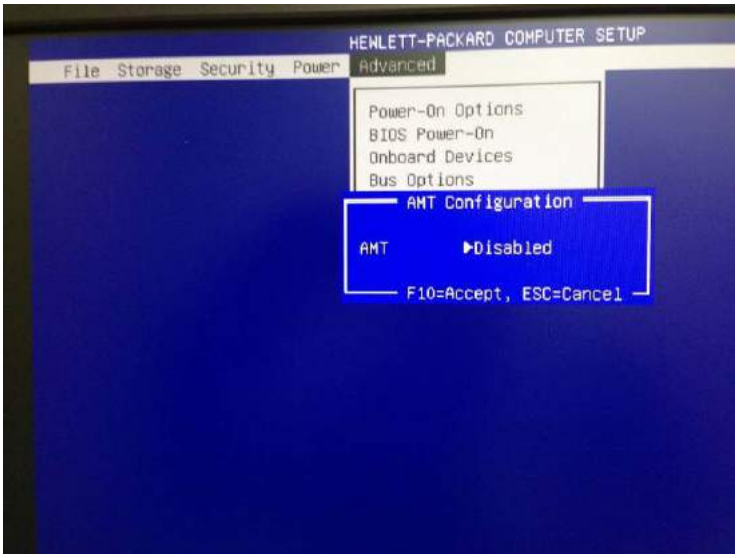
BIOS Setup

Turn on the PC Power supply, hold down “F10” on the keyboard when the HP logo appears to access BIOS Setup mode. In BIOS Setup mode, Select AMT Configuration from Advanced menu and press Enter.



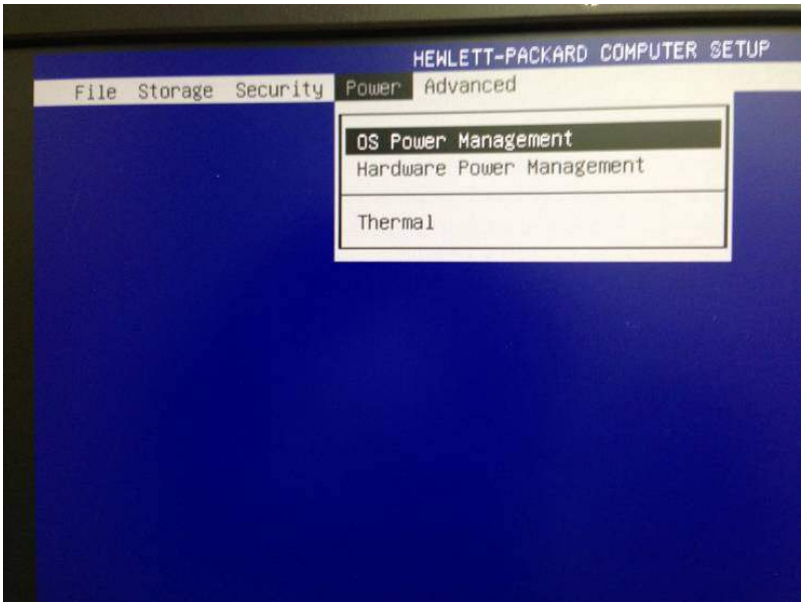
【HP Z series BIOS Setup】

Select “Disabled” for AMT and press “F10” to accept.



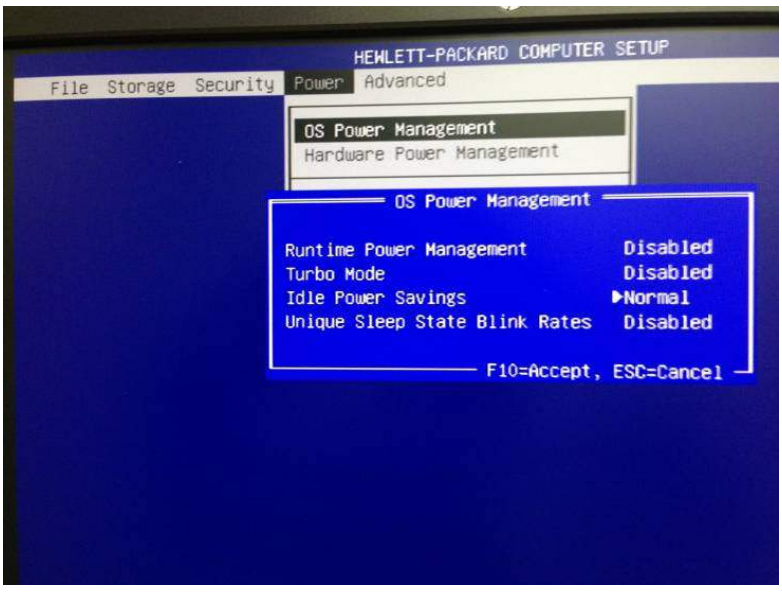
【Disable AMT】

Next, select “OS Power Management” from Power menu.



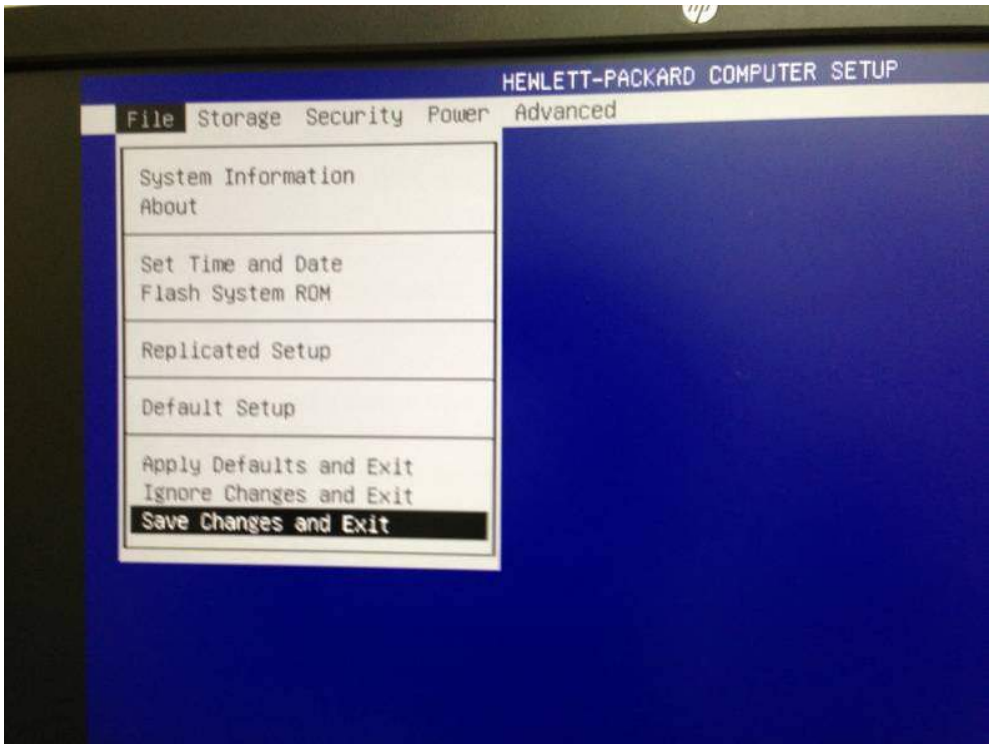
【OS Power Management】

Set ”Idle Power Savings” to Normal and press F10 to accept it.

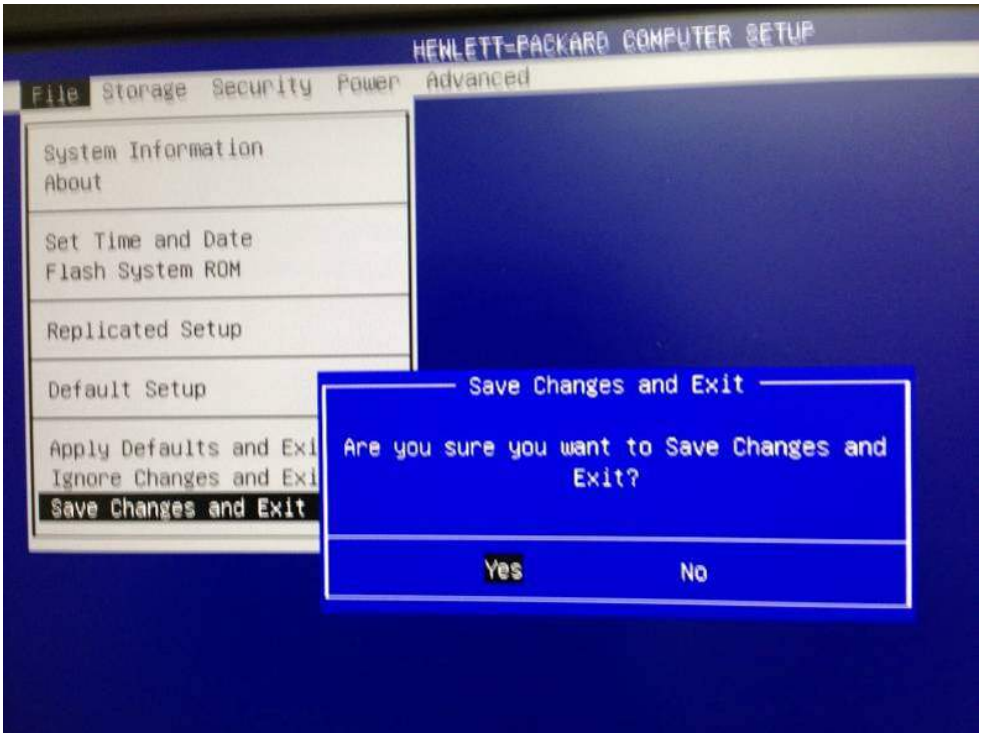


【Set Idle Power Savings to Normal】

When the above setting is done, select Save Changes and Exit from File menu.



【Save Changes and Exit】



When the confirm message pop up, select “Yes” and press Enter to finish the setting. The computer will be restarted.

Tip:
The HP Z series has a known issue where it can take several minutes to finish starting up. If this happens, just wait until start-up is complete. In rare cases, a message may be displayed indicating that it cannot start up. In these cases, remove any memory sticks, CD-Rs, or other media, and try starting up again.

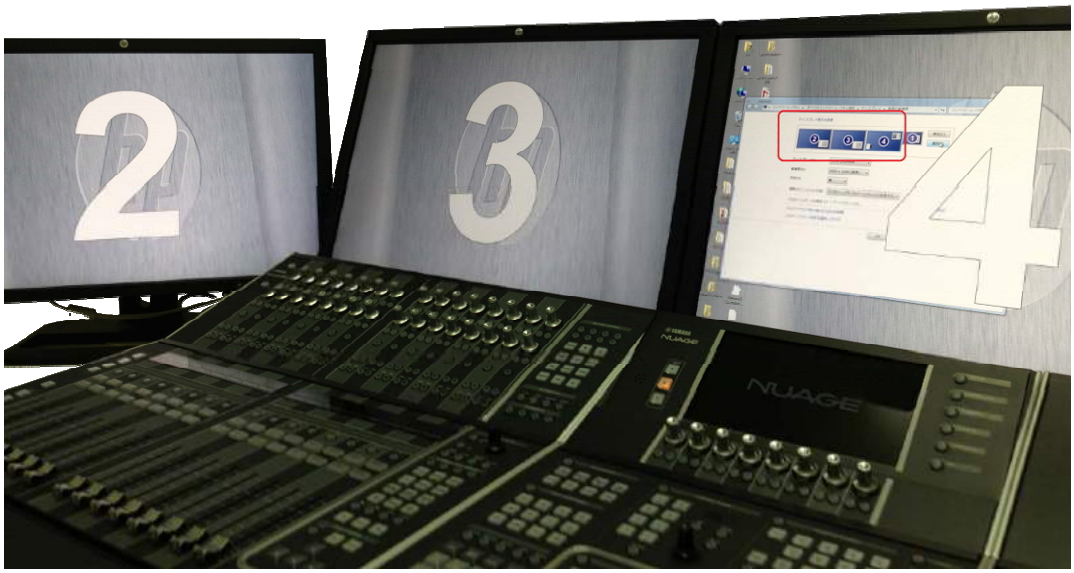
6-5. Settings for Windows and Mac OS X

Display settings

Windows

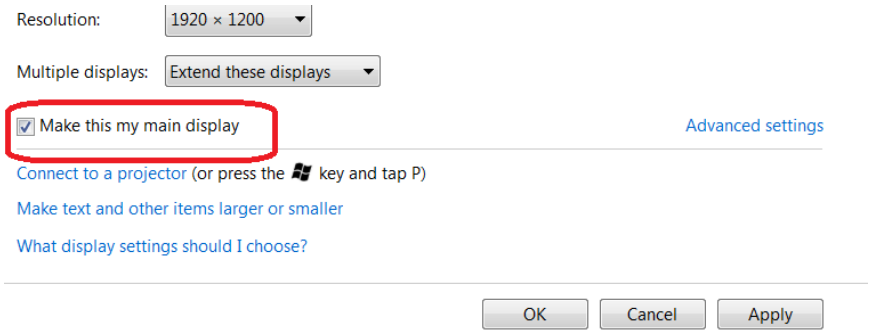
Although you have already connected the computers and computer monitors, you need to set up the operating system to reflect the physical layout of the screens. In Windows, select "Displays" from the control panel, and then select "Screen Resolution."

Next, click the "Identify" button and make note of the numbers that are displayed for each monitor. Then arrange the monitor icons in Windows in that order and click "Apply." To confirm that Windows now has the screens laid out to match the physical layout of the monitors, move the mouse so that the cursor runs across all the screens, and observe whether it moves across them sequentially.



【Display Arrangement (Windows)】

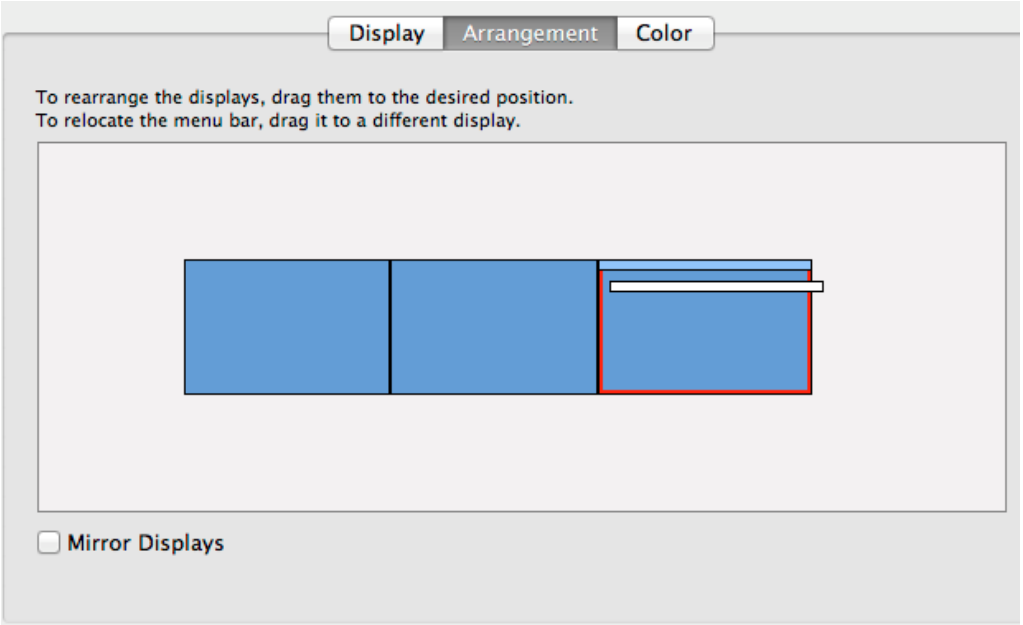
Next, to make it so that the monitor positioned at the Nuage Master is treated as the main display, click the checkbox labelled "Make this my main display" (if that is already the main display, do nothing).



Mac OS X

From the System Preferences window, click the Displays button, and then the "Arrangement" tab. Icons representing all the connected monitors will appear; drag them around so that their layout is the same as the physical layout. To confirm which display icon corresponds to which physical monitor, click and hold on the icon; a red frame will appear on that monitor. Use that feedback to arrange the displays.

Next, to make it so that the monitor positioned at the Nuage Master is treated as the main display, drag the white bar representing the menubar from whichever display currently has it to the one that you want to be the main display and drop it there.



【Display Arrangement (Mac OSX)】

Computer optimizations

Windows

The following procedure optimizes your Windows machine for use with Nuage. Most of the points here are recommendations for improving audio recordings and processing performance on Windows computers (note that performance improvements cannot be guaranteed due to differences between systems). Before changing your computer's basic settings, we recommend creating a recovery point for your system. The following recommendations assume that you are using Windows 7 (the way you access these functions on other versions of Windows may differ). Also please be aware that following these recommendations may have adverse effects on your computer.

1. Use a hard disk drive other than the startup drive with your OS installed as your recording and playback drive. Run the defragmentation tool and disk scanner periodically on your hard drives. This will keep data access fast and reduce disk errors.
2. Disable screen savers, anti-virus software, Windows firewall, and Windows Defender. If these background tasks are activated unexpectedly, they can cause audio drop-outs. Also disable the system sound so that you do not accidentally record or play back system sounds (Note: we recommend not disabling anti-virus software and firewalls for computer that are connected to the Internet).
3. If you need to use pagefiles, increase virtual memory (swap space). Although this depends somewhat on other factors, you should generally aim for virtual memory to have double the capacity of RAM (However, that much RAM may not be needed if you already have enough memory). If you do not need to use pagefiles, disable this function on all your drives. Refer elsewhere for more information on optimizing swap space, virtual memory, and page files.
4. Confirm that your computer's power profile (Start > Control Panel > Power Options) is set to "High Performance" (or "Prioritize Performance"). This lets you avoid some CPU speed restrictions and unnecessary performance-robbing visual effects. However, “Aero” should be enabled.
5. Set the power-profile settings so that the computer does not sleep or hibernate even when idle, and so that power to the hard drive is not shut off. If the computer unexpectedly shuts down, audio recordings may be interrupted and lost.
6. Confirm that DMA (direct memory access) is enabled for each IDE channel. DMA is the recommended (fastest) method of disk access for audio-oriented computers. To enable DMA, open the disk manager (right-click Computer, then select Manage > Disk Manager). Next, expand the "IDE ATA/ATAPI Controller," and right-click on each channel to view its properties; under "Advanced Settings," confirm that DMA is enabled.
7. Delete all unneeded fonts. Reading fonts consumes system resources.

8. Confirm that all hard drives that will be used in audio processing have NTFS formatting.
9. Confirm that the OS, device drivers, BIOS, and chipset drivers are all up to date. For details, refer to the websites of the chipset manufacturer.
10. Set the processor's schedule to "Background Services" (Control Panel > System > Advanced System Settings > Advanced Settings > Performance). This will increase the performance of audio drivers.
11. Turn off automatic indexing. Type "indexing options" under the Start menu, hit the Enter key, and click "Change". Indexing is a processor-intensive operation that can adversely affect audio.
12. Disable Wi-Fi and Bluetooth if possible. A computer attempting to maintain an unstable Wi-Fi connection is likely to encounter spikes in the CPU load, which can cause audio drop-outs. The following is for reference, and is recommended reading for anyone needing to brush up on these topics.
13. If you know of any unnecessary startup services, use services.msc to set those to "manual." If you are not sure what service's settings you should change, either skip this step or refer to this BlackViper services settings page:

(http://www.blackviper.com/service-configurations/black-vipers-windows-7-service-pack-1-service-configurations/)

14. Use DPC Latency Checker (http://www.thesycon.de/eng/latency_check.shtml), which is free, to analyze your computer's processing performance. If this shows frequent DPC spikes exceeding 100 microseconds, you may get audio dropouts when running with low buffer settings. As a typical target, if DPC latency averages less than 100 microseconds, the computer's settings are OK. Spikes longer than that need to be minimized. Spikes such as these are typically caused by drivers for other hardware devices. Unfortunately, the only way to remove the problematic driver is to go through them one at a time. Before doing that, always update your hardware drivers.

Mac OS X

1. Disable all energy-saving settings. Select "Energy Saver" from System Preferences, and disable sleep as shown below.

【Disable Display/HDD Sleep】

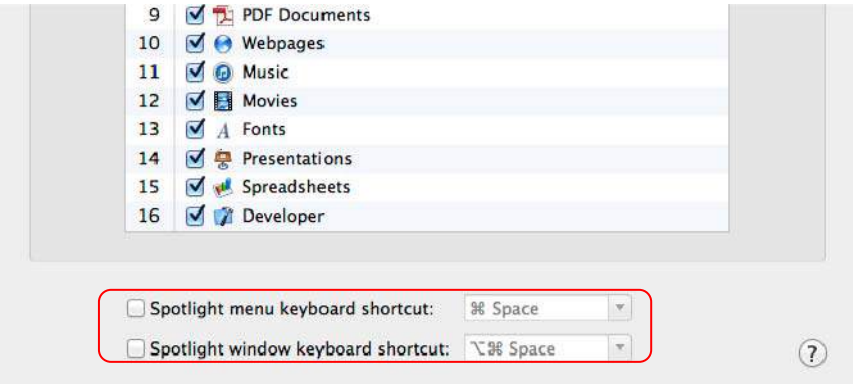
2. Disable software update to prevent automatic updates. Only use operating-system updates that have been tested by and are officially supported by Yamaha/Steinberg.

【Disable Software Update】

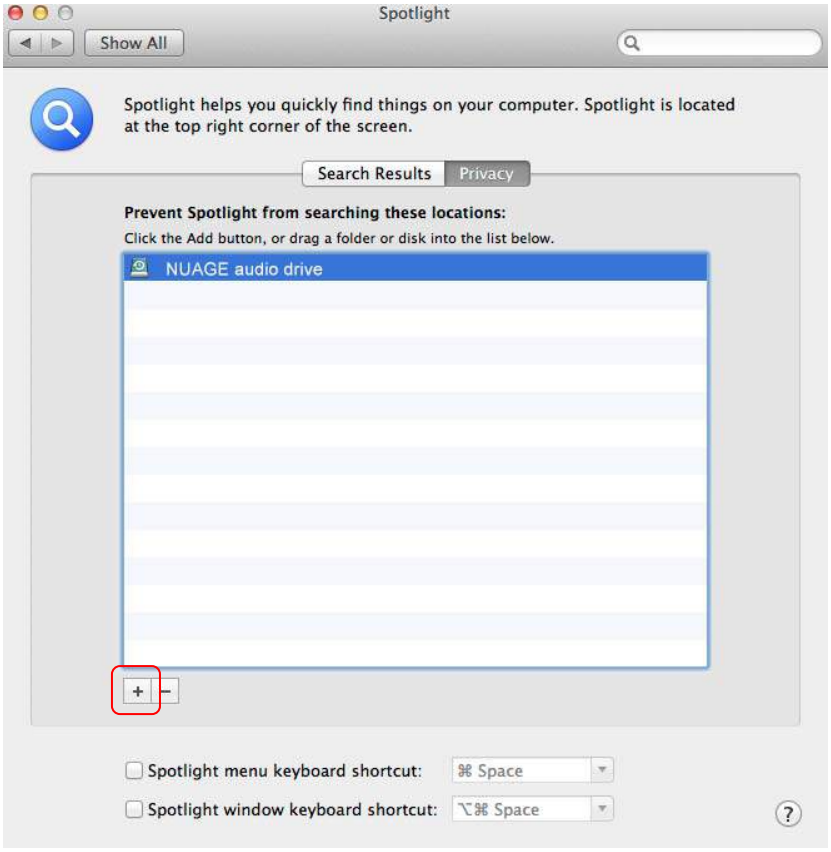
3. Set up a dedicated hard drive for audio recording, separate from your system hard drive. This will ensure that audio data read/write operations are more efficient, by avoiding interference from operating-system read/write operations, and will permit you to record and play back more tracks simultaneously. Furthermore, if there are any disk problems, having separate system and audio drives will make it that much easier to replace the drive to recover the system. We recommend that you install NUENDO on the same drive as the operating system (the system drive) and use the other drive exclusively for reading and writing audio data, although this is not strictly necessary.

4. Disable screensavers, anti-virus software, and firewalls. Background tasks can cause audio dropouts if they activate unexpectedly (NB: we do not recommend disabling firewalls or anti-virus software for any computer connected to the Internet).

5. Disable the keyboard shortcut for Spotlight, and prevent Spotlight from searching the audio drive.

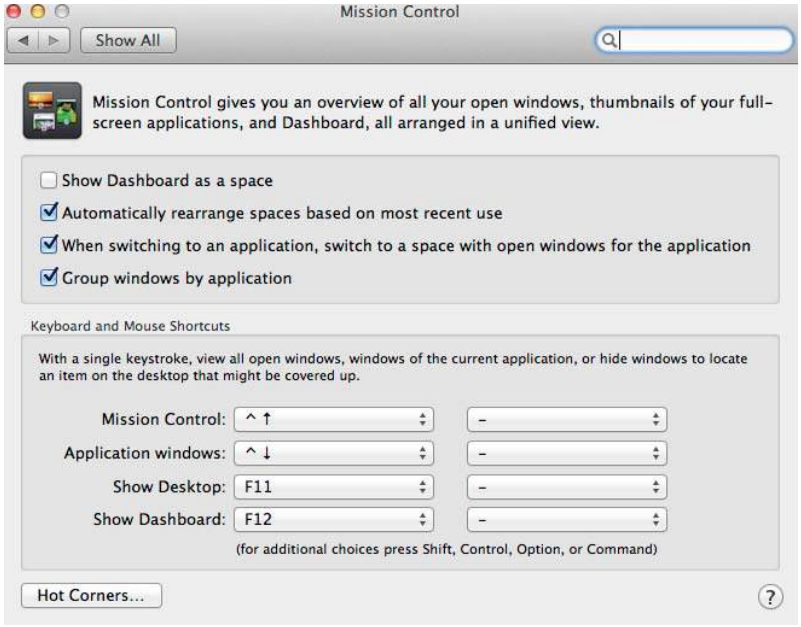


【Disable Spotlight shortcut keys】



【Prevent Spotlight from searching the audio drive】

6. Disable the keyboard shortcut for Mission Control.

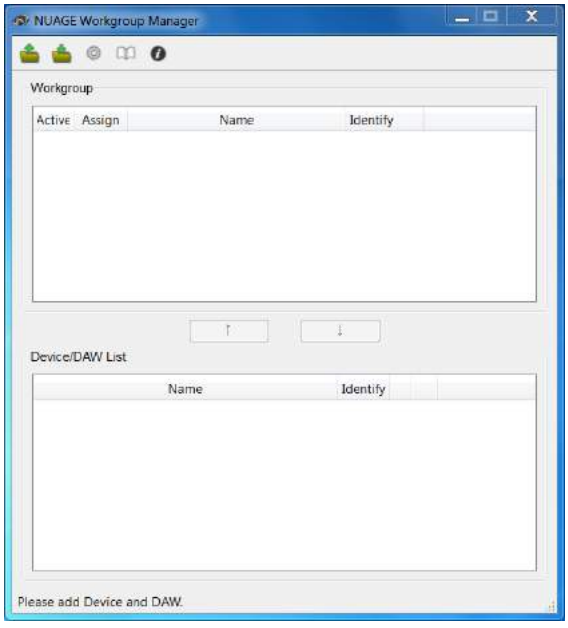


【Disable Mission Control shortcut keys】

7. Disable Wi-Fi and Bluetooth.

6-6. Settings for Nuage Workgroup Manager

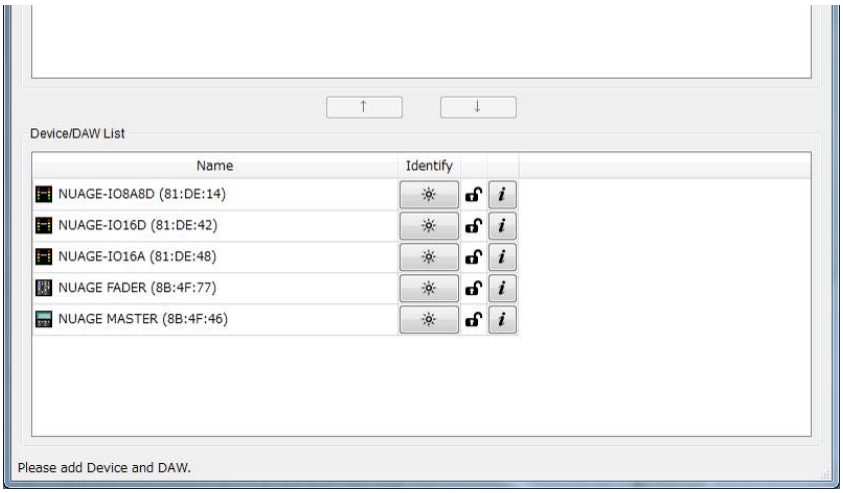
If Tools for Nuage has been installed, Nuage Workgroup Manager will launch automatically when the computer is started, so it should not be necessary to launch the program (you may need to launch Nuage Workspace Manager if you quit the program manually).



【Nuage Workgroup Manager (Windows)】

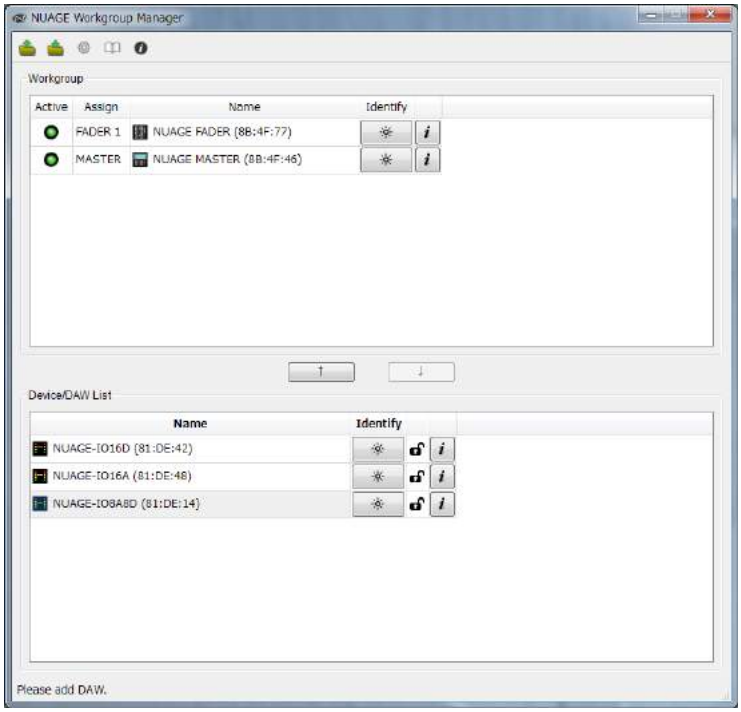
【Nuage Workgroup Manager (Mac OSX)】

If the Nuage Fader/Master and the Nuage I/O network switch are already hooked up, you should see the following in the Nuage Workgroup Manager window.



【Nuage devices recognized on the Workgroup Manager】

Select each device one at a time and click the up-arrow button to add it to the upper pane (Add this following the setup procedure for Nuage I/O in Section 3-3).

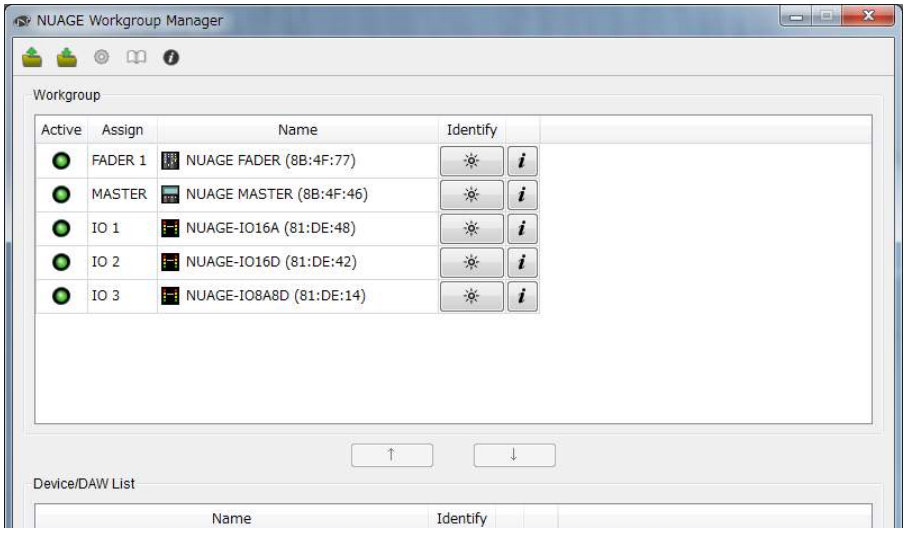


【Adding devices to the Workgroup】

Tip:

If you are using more than one Nuage Fader, add them in order, starting with the one you want to treat as the first Fader (eg, if you have two Faders next to each either, treat the left one as Fader 1 and the right one as Fader 2). To select the right unit from the Device/DAW List, click the Identify button; this will cause an LED on that unit to blink briefly. If for some reason the Faders have been added to the Workgroup in the wrong order, click the down-arrow button to remove all the Faders from the Workgroup and then start over.

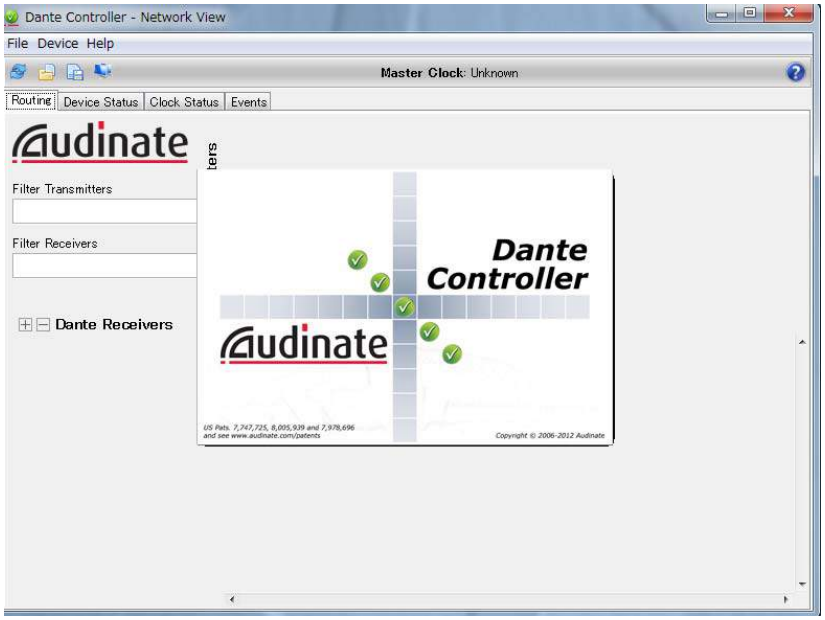
Add all the devices to the Workgroup, and then confirm that the green Active indicator appears.



【All devices added to the workgroup active】

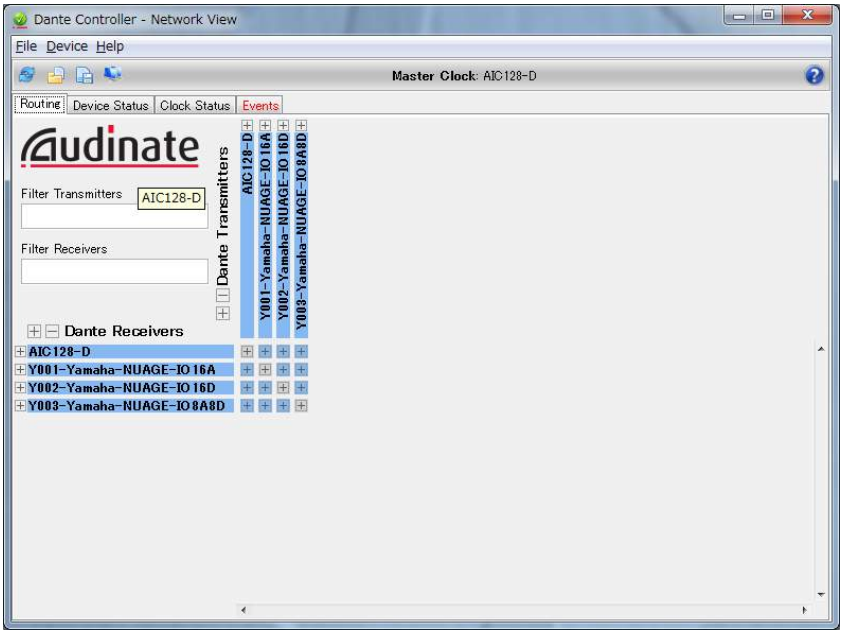
6-7. Settings for Dante Controller

There are two main types of patch settings related to Nuage audio input/output, and they both need to be set correctly. The first is patching in Dante, the second is patching in NUENDO. Set up patching in Dante first by launching Dante Controller. (Details for patching in NUENDO will be explained in 6-10.)

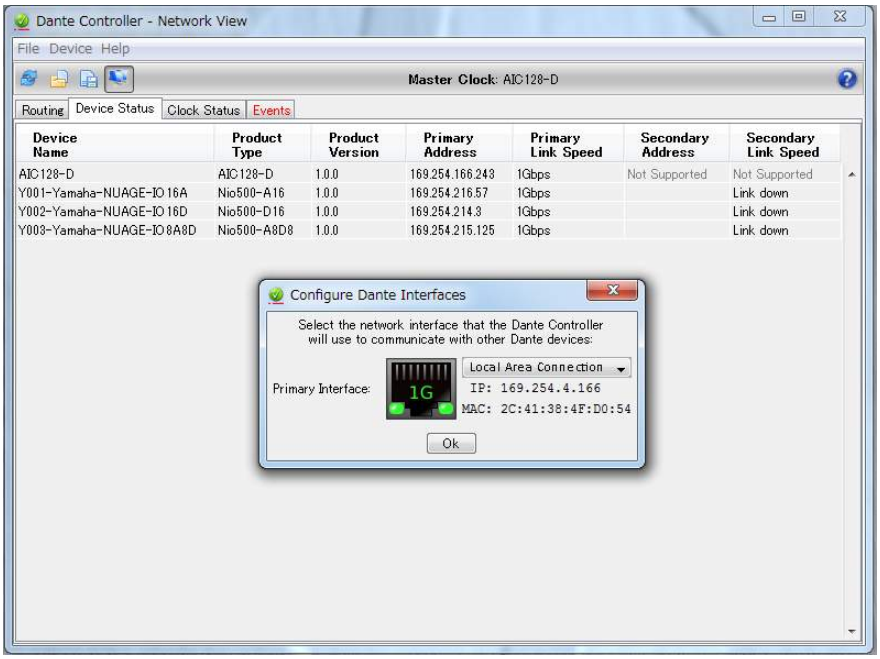


【Dante Controller】

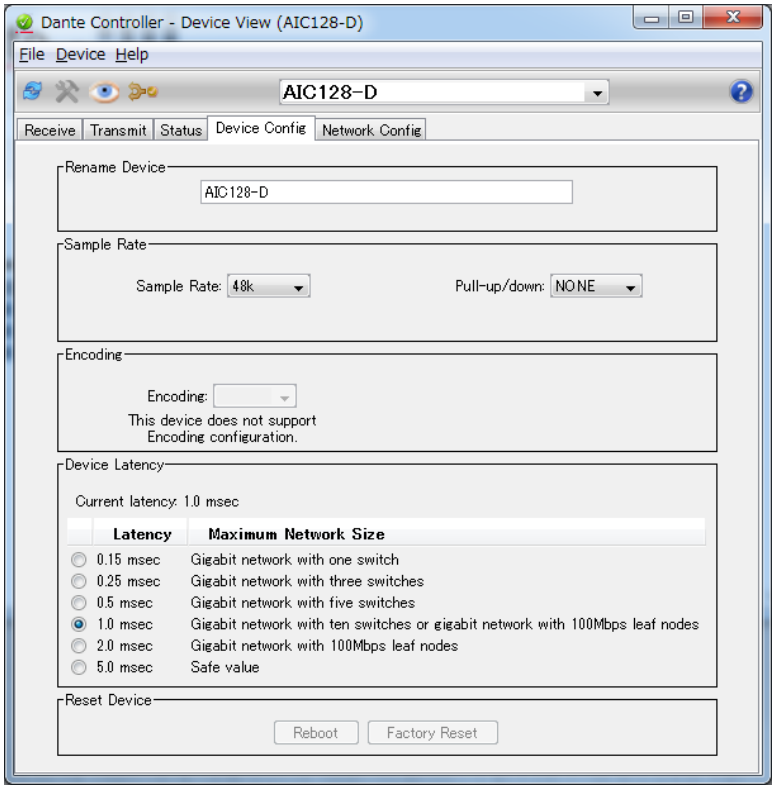
When the Dante Accelerator card and Nuage I/O are connected, you should see the following.



Select the port that Dante Controller connects to (If you don't select the correct port, Nuage I/O and Dante Accelerator will not be displayed).

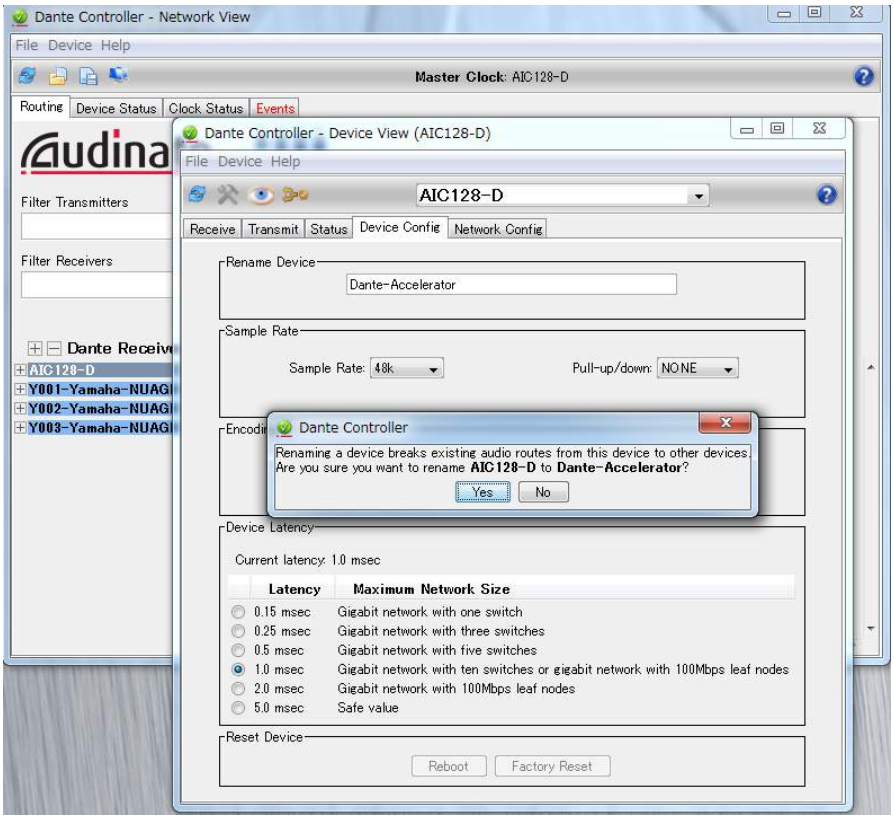


The device names can be changed so it is easy to remember (not mandatory). Open the Device Config window.



【Device Config window】

Change the device name shown in the Rename Device field and hit the Enter key. A confirmation dialog will appear; click Yes and the device's name will be changed (Spaces in names will not be shown; use hyphens or underscores instead).



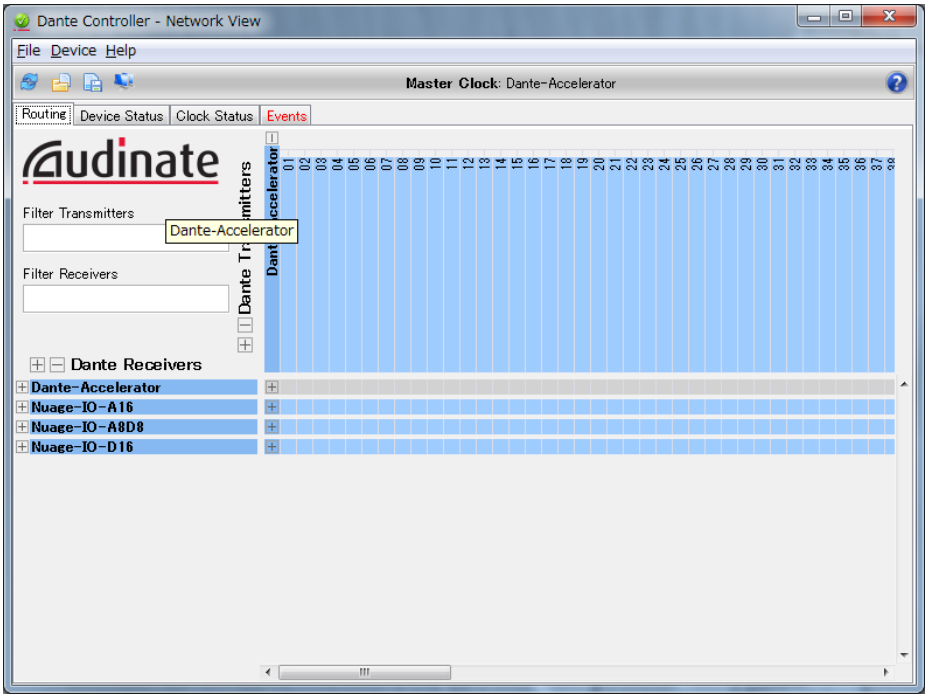
【Renaming the device name】

Change the name for Nuage I/O in the same way, as shown below.

TIPS :

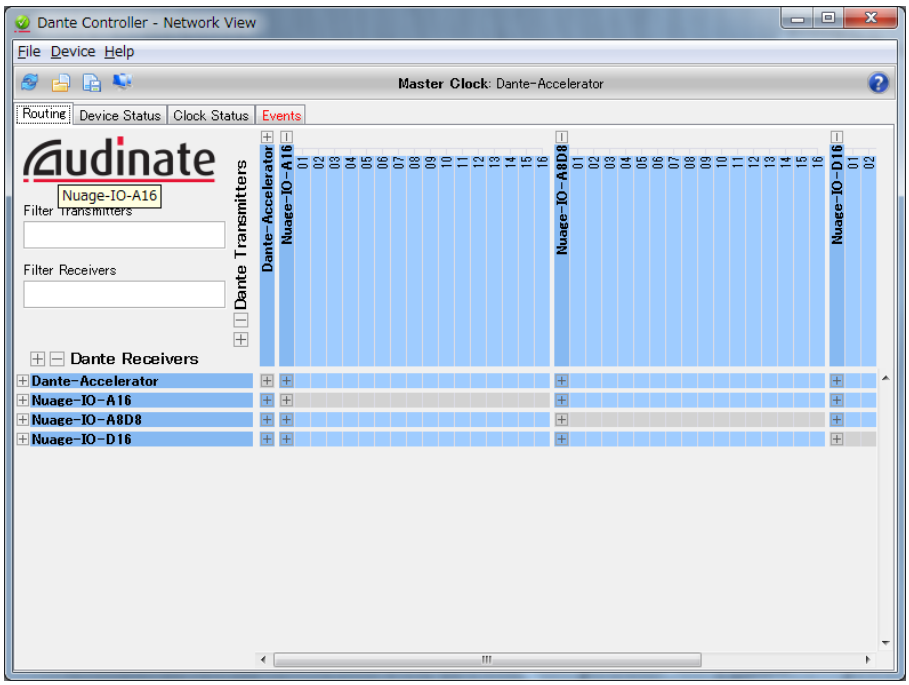
Do not change “Y001-Yamaha-” written at the beginning of Dante Accelerator’s name, or ”Y00X-Yamaha-“ witten at the beginning of Nuage I/O. If you change the name, they may not be able to be seen by the other Yamaha Dante equipment, such as CL digital mixing console. Therefore, we do not recommend you to do so.

The grid in Dante Controller shows output ports (transmitters) in columns, and input ports (receivers) in rows. Click the "+" button above Dante Accelerator to expand it horizontally; this lets you check Dante Accelerator's 128 channels of output.

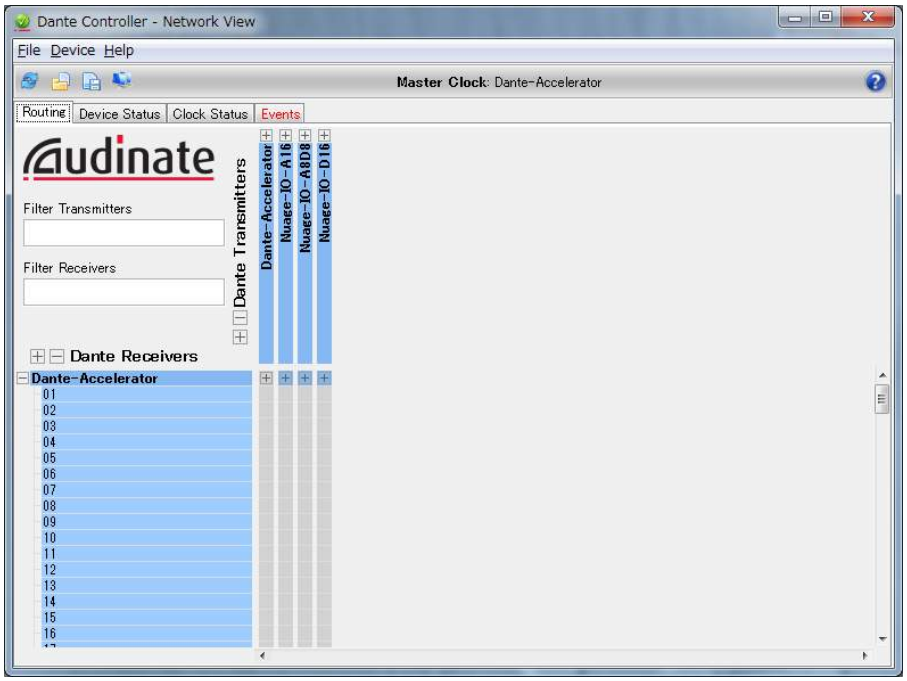


【Dante Transmitters】

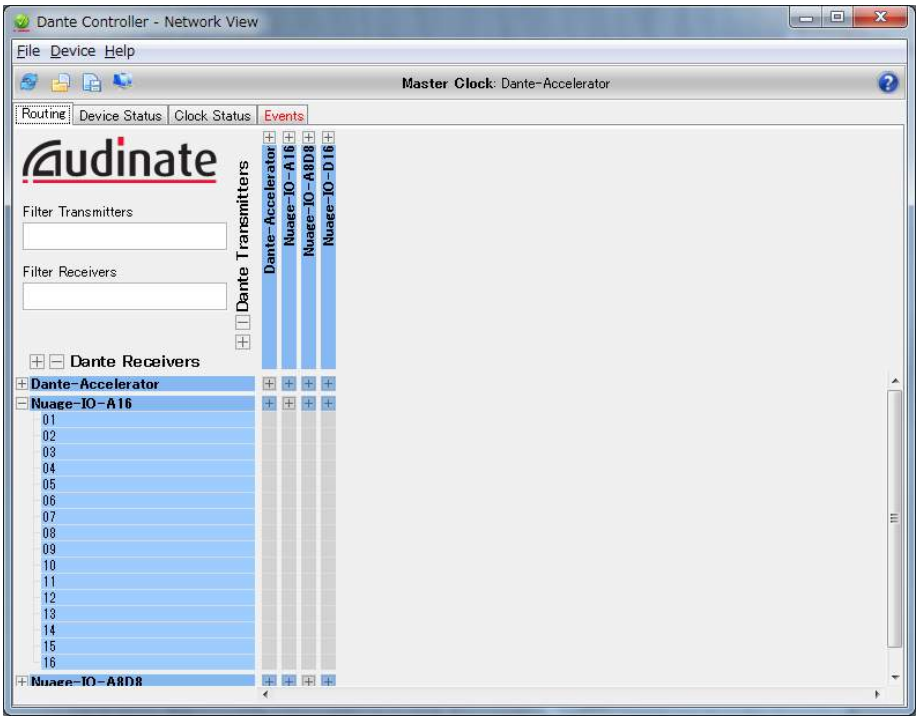
Click the "+" button again to close up the Dante Accelerator grid. Next, disclose the 16 channels of output for each Nuage I/O.



You can do the same thing with the "+" buttons at the left of the rows to expand them vertically. Check Dante Accelerator's 128 channels of input and each Nuage I/O's 16 channels of output.

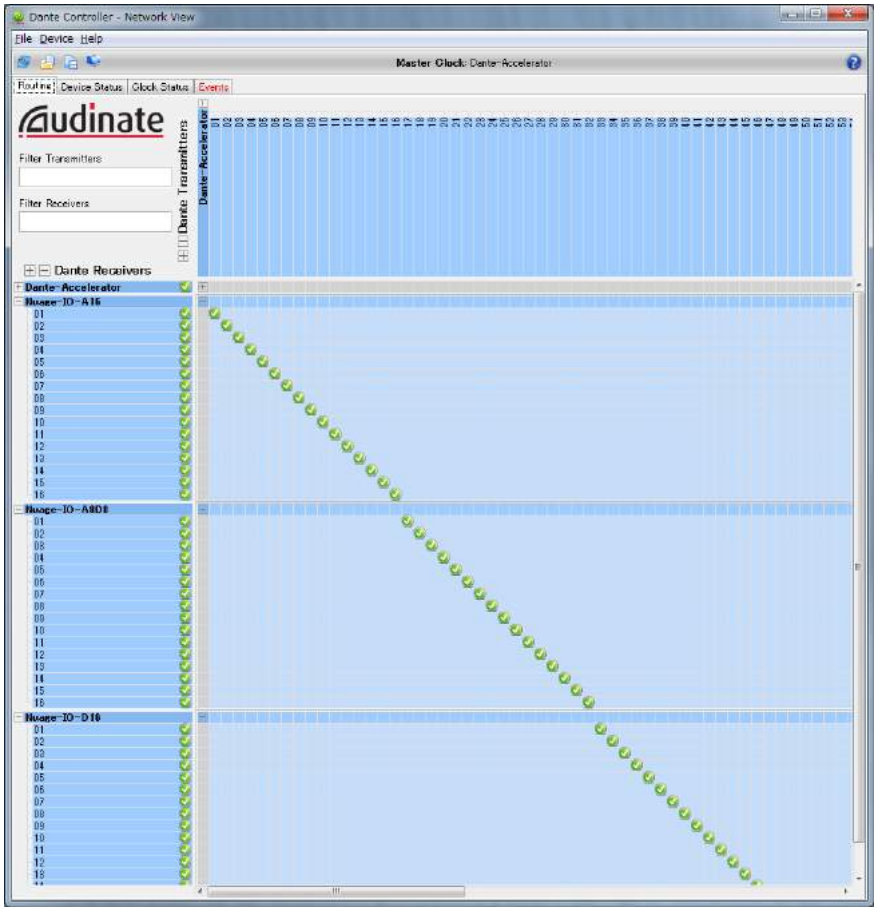


【Dante Receivers】



Once you understand how the Dante Controller grid works, you can set up the patches between the Dante Accelerator outputs and the Nuage I/O inputs, and between the Nuage I/O outputs and the

Dante Accelerator inputs. To set up a patch, just click on the box at the intersection of the patch-point. Continue until all patches are set.



【Patch Dante Transmitters and Receivers】

TIPS：

With only the first 16 channels, clicking the intersection point between device names while holding down the Control key will patch the inputs and outputs for those 16 channels one at a time, in order. Clicking while holding down the Control and Shift keys will remove all the patches for those 16 channels at once. The 17th channel and beyond need to be patched manually, one at a time. It can take a few seconds for each patch to be set, so wait for the setting process to finish before clicking again. The figure above shows the Dante Accelerator outputs patched to the I/O inputs; you will also need to match up the patches between each Nuage I/O output and Dante Accelerator input.

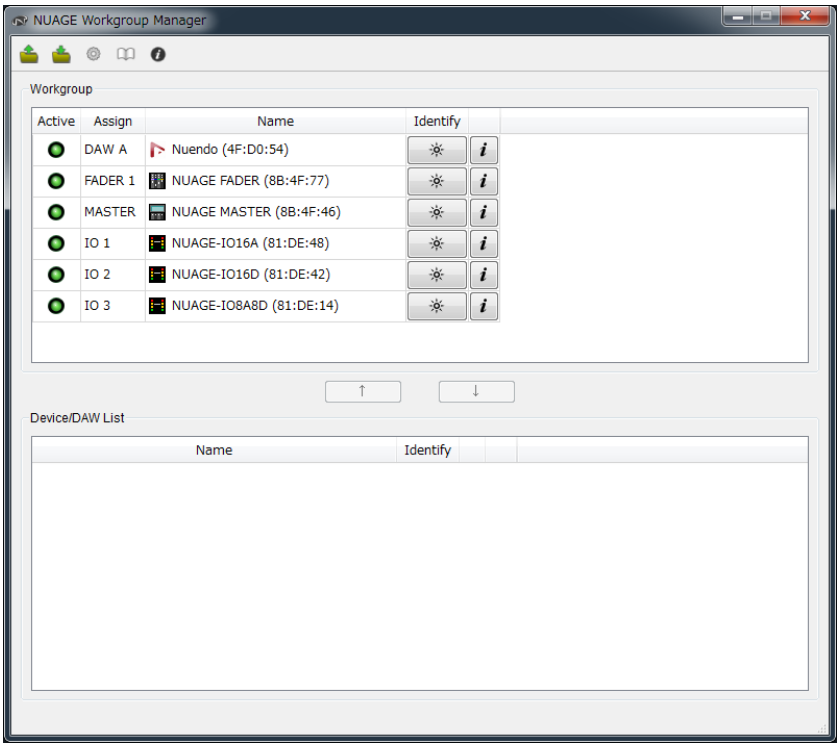
TIPS：

When patching Nuage I/O and Dante Accelerator, it is necessary to follow the ID order from the first unit, starting from 1-16, then 17-32 and 33-48. (If the patch is not in order, Direct Monitoring, Surround Processor and the linkage with SyncStation may not work properly.

Once you have finished setting up patches, save the settings file. If your settings ever get changed, you can recover your original patches by loading the settings file.

6-8. Setting up and launching NUENDO

Next, launch NUENDO. It will be displayed in the Device/DAW list; add NUENDO 6 to the Workgroup.



【Add NUENDO6 to the Workgroup - completed】

Once you have added NUENDO 6 to the Workgroup, the mixer window will be displayed full-screen.

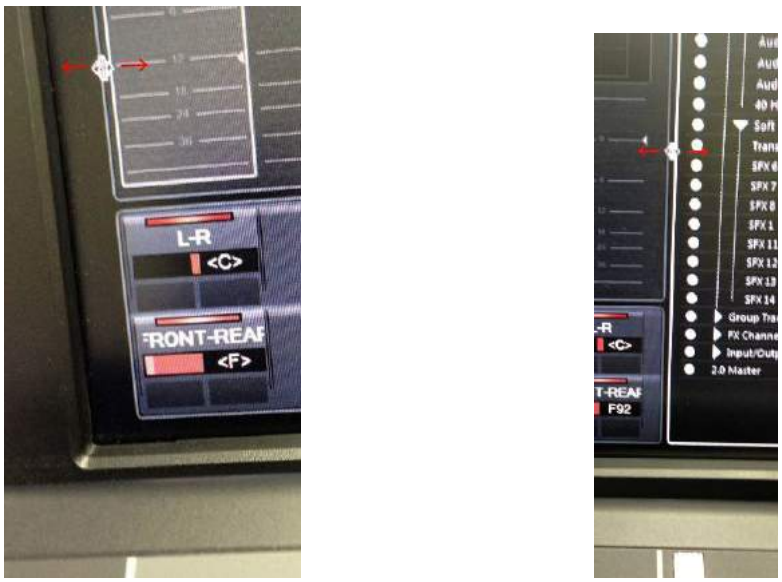
Mixer window settings

In Section 6-5, you set up the physical order of the computer monitors and how they are addressed by the operating system, but the first time NUENDO is launched, it will not recognize which monitor to use for Nuage Fader, so you need to force NUENDO to recognize it (The NUENDO Workspace window will be displayed on the monitor that the operating system recognizes as being the main monitor, so Nuage Master should be displayed correctly). As shown below, hold down the buttons SHIFT, CONTROL, ALT on the lower-left of the unit and press the "Section Control" buttons numbered 1 through 8 at the upper right in order until the monitor that you want to use for Nuage Fader has the right window.

【Adjusting Mixer window positions】

Tip:
To check whether the mixer window is displayed on the right monitor, open a project or create a new one, and then press any SEL button on the Nuage Fader. Check to see whether the channel strip corresponding to that channel has a white outline. If it is shown correctly above the SEL button that you pressed, then your settings are correct.

Next, adjust the display region of the mixer window. The first time it is launched the window will not have the correct left/right positioning. Use your mouse to drag the left and right edges of the window to the correct positions.



【Adjust left/right end of the screen】

Once you have adjusted the left/right positioning and the bottom edge, if necessary, each channel (track) on screen should be positioned in a vertical line with the Nuage Fader's 16 channels.

【Display monitor/Nuage Fader adjusted】

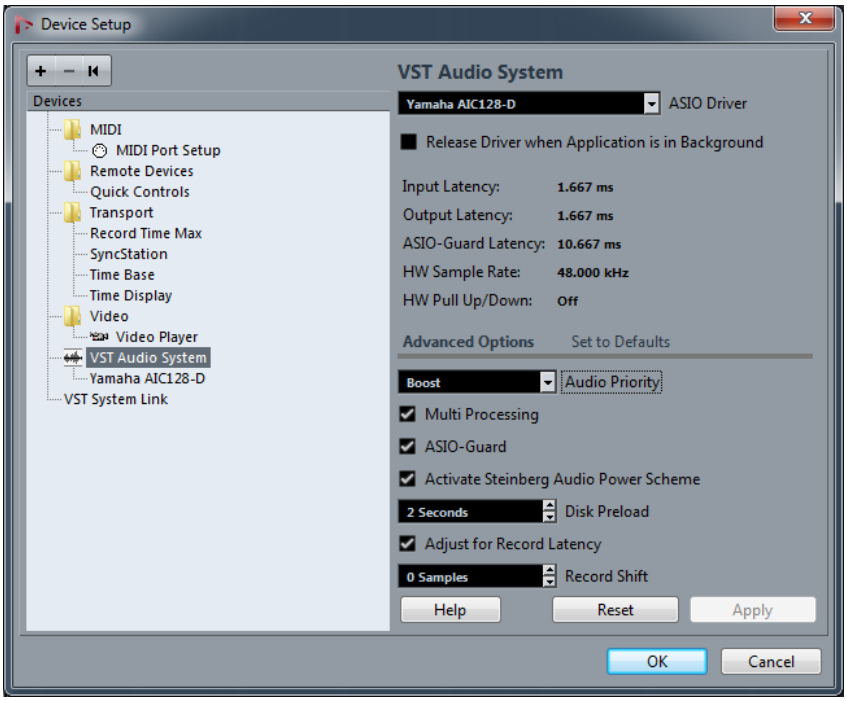
Other window settings

Once you have finished setting up the mixer window, position the transport, time-display, video, and other windows. If you would like to display the video-add window full-screen, open the video window (press the F8 key), drag it to the screen where you want it displayed, and then double-click the window.

6-9. Device Setup settings

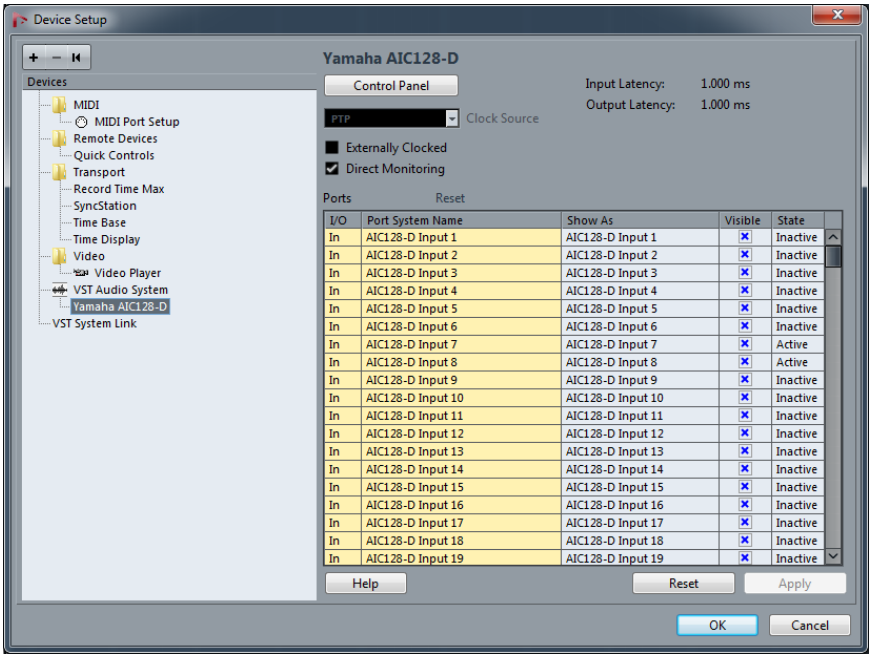
You should make sure that the following have been set in advance in Device Setup: VST Audio System and Yamaha AIC128-D below it, and VST System Link.

Select the Dante Accelerator card (Yamaha AIC128-D) as the VST Audio System's ASIO driver. Set Audio Priority to Boost, and check on Multi Processing, ASIO-Guard, and Activate Steinberg Audio Power Scheme.

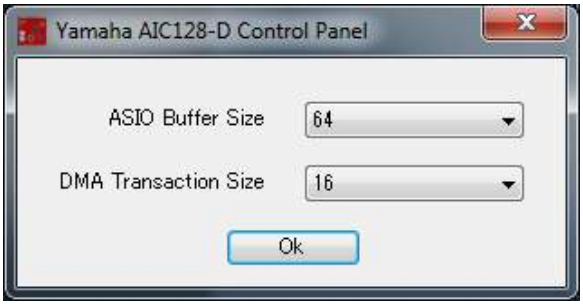


【VST Audio System】

Next, open Yamaha AIC128-D, and, and if you want to use the Direct Monitoring feature, check on Direct Monitoring. Click the Control Panel button, and set up the settings as shown below.

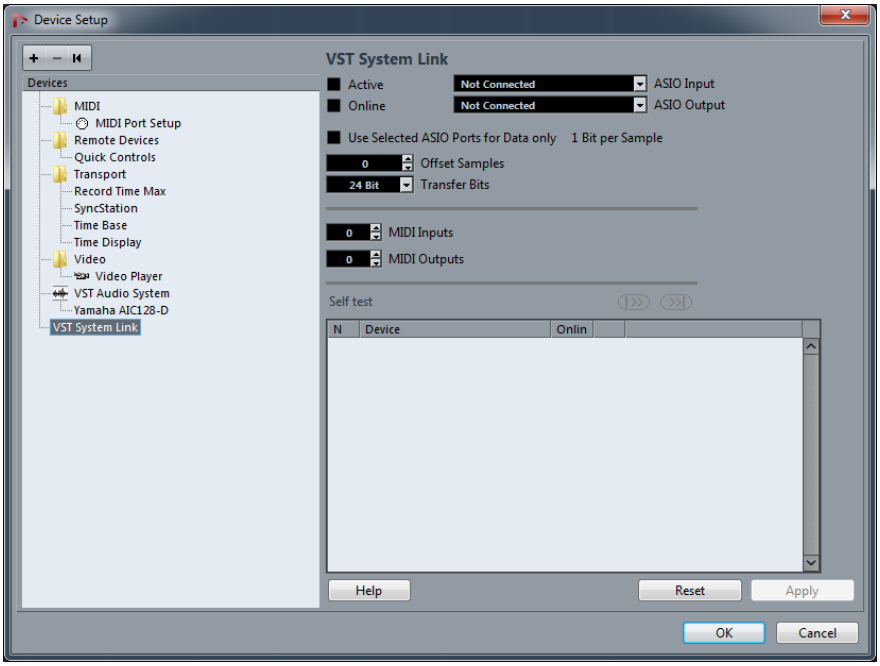


【Yamaha AIC128-D】



【Yamaha AIC128-D Control Panel】

Finally, open VST System Link and make sure that nothing has been set.



【VST System Link】

Tip:

Make sure nothing is set on the VST System Link screen. There is no screen for setting an Extended System Link for synchronizing SyncStation and samples. System Link settings should be handled using the Project Synchronization Setup described below. If anything has been set in the System Link screen, an error message will be displayed after a certain period of time, after which the System Link will be removed.

TIPS：
Always startup NUENDO system with NUENDO as DAW A. If the DAW A is not started up, the system does not operate properly.

6-10. Project Synchronization Setup

Use the Project Synchronization Setup screen to set up synchronization for video devices that use SyncStation and NUENDO projects. Settings should be as follows. (Project Synchronization is under Treansport menu.)

Timecode-related

Timecode Source > Steinberg SyncStation (SyncStation receives timecodes from video device)

Steinberg SyncStation > Timecode Source > RS422-out (SyncStation receives timecode from video device via RS422)

Frame Reference > Video (SyncStation receives video sync)

Clock Reference > User Frame Rate (SyncStation generates word clock based on video sync signal)

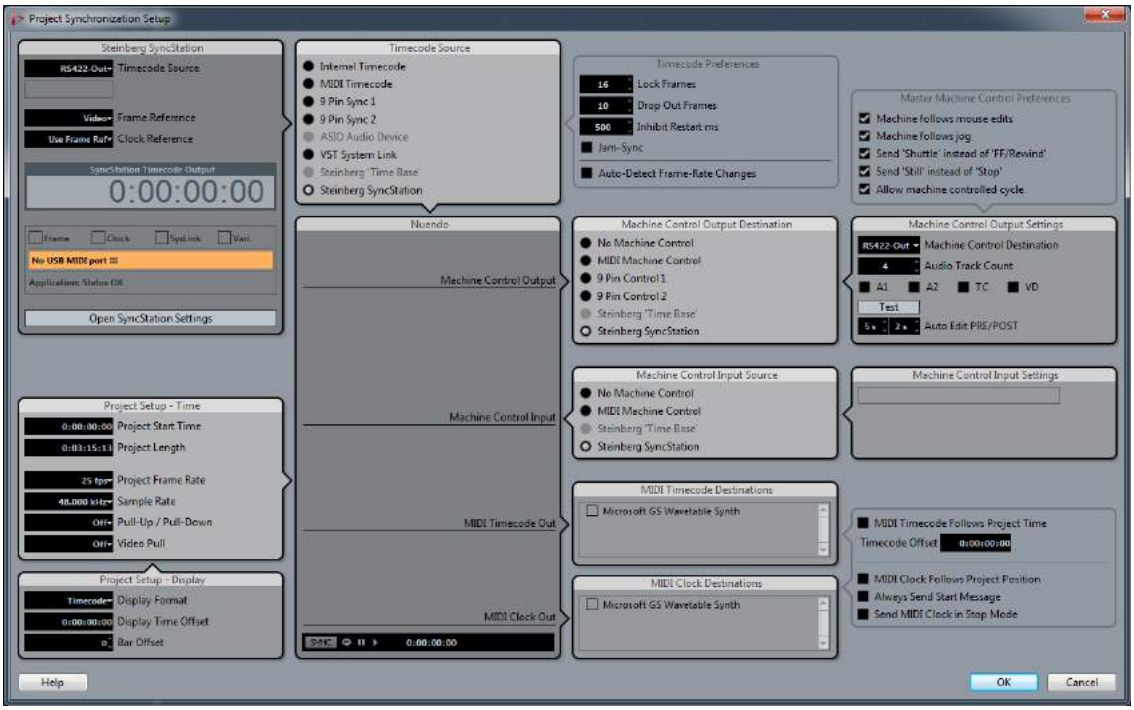
Machine-control-related

Machine Control Output Destination > Steinberg SyncStation (Machine control sent from SyncStation)

Machine Control Output Settings

Machine Control Destination > RS422-out (Machine control sent via RS422)

Machine Control Input Source > Steinberg SyncStation (Machine control received from external device by SyncStation)



【Project Synchronization Setup】

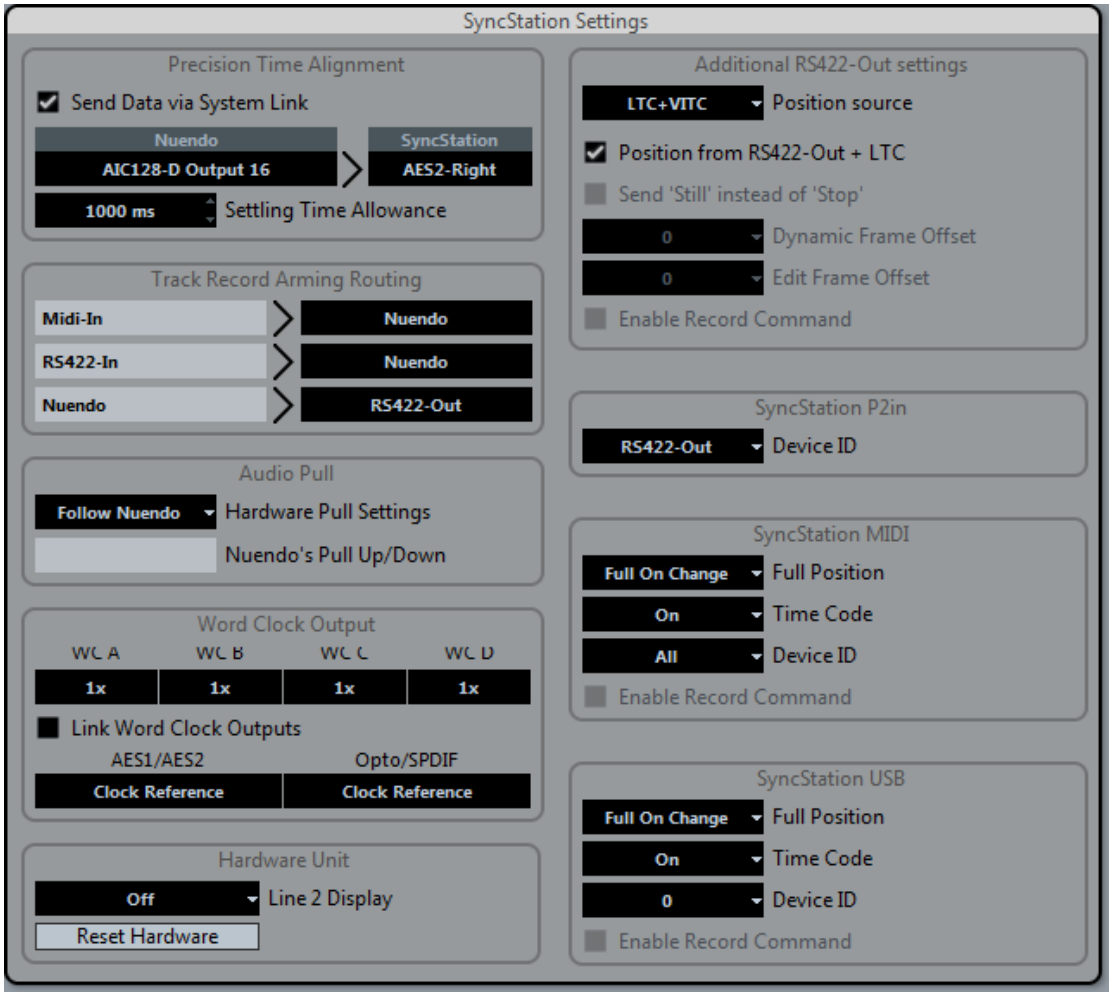
Click the Open SyncStation Setting button and set as follows.

Settings for Precision Time Alignment (System Link)

Check on Send Data via System Link

If the Nuage I/O's System Link Out jack connects to the SyncStation's AES jack (BNC) using a BNC cable, select "AIC128-D Output 16" in NUENDO, and select "AES2-Right" in SyncStation.

Select "LTC+VITC" for the Position Source in Aditional RS422-out Settings.



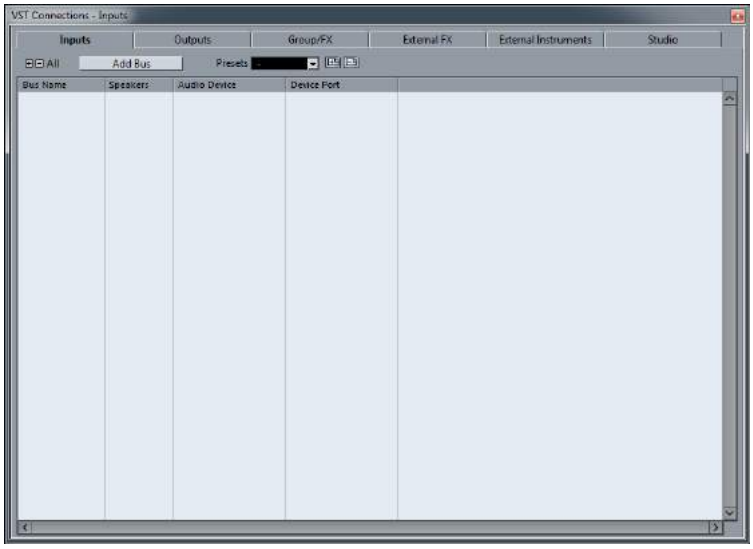
【SyncStation Settings】

The project synchronization settings shown above are complete. Check to make sure that the three Frame, Clock, and SysLink indicators light up, and that NUENDO's transport is synchronized.

Tip:
The best settings for synchronizing with video devices will vary depending on the make and model of video equipment you are using. You will need specialized knowledge and some experimentation to find the best settings. We do not go into a detailed discussion of this topic, but do explain the basic settings.

6-11. Setting VST Connections

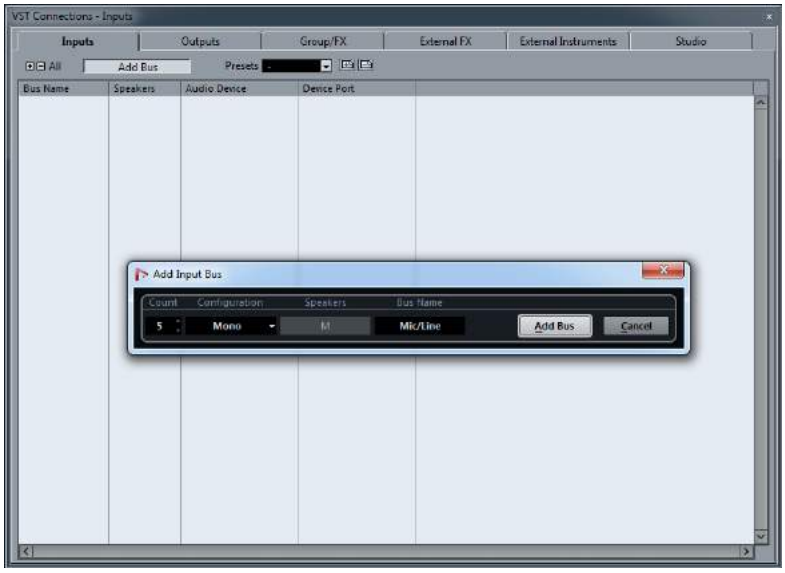
After launching NUENDO, set up audio patches (VST Connections) in NUENDO. Open the VST Connections (press the F4 key) window from the NUENDO 6 Devices menu.



【VST Connections】

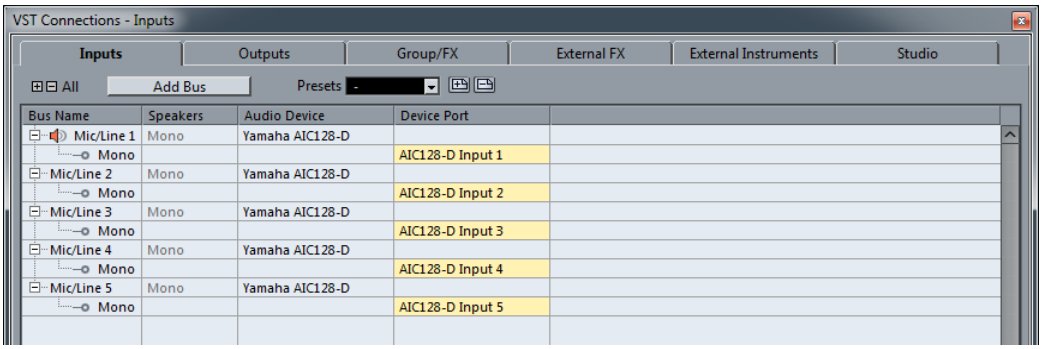
Inputs Tab

The main settings for you to set up here are Inputs, Outputs, and Studio. Set the Inputs in order, based on the input channels you set up in Section 4-4. First, add five channels of mic/line input. Click the Add Bus button, type "Mic/Line" in the resulting dialog, set the number of channels to 5, and click the Add Bus button.

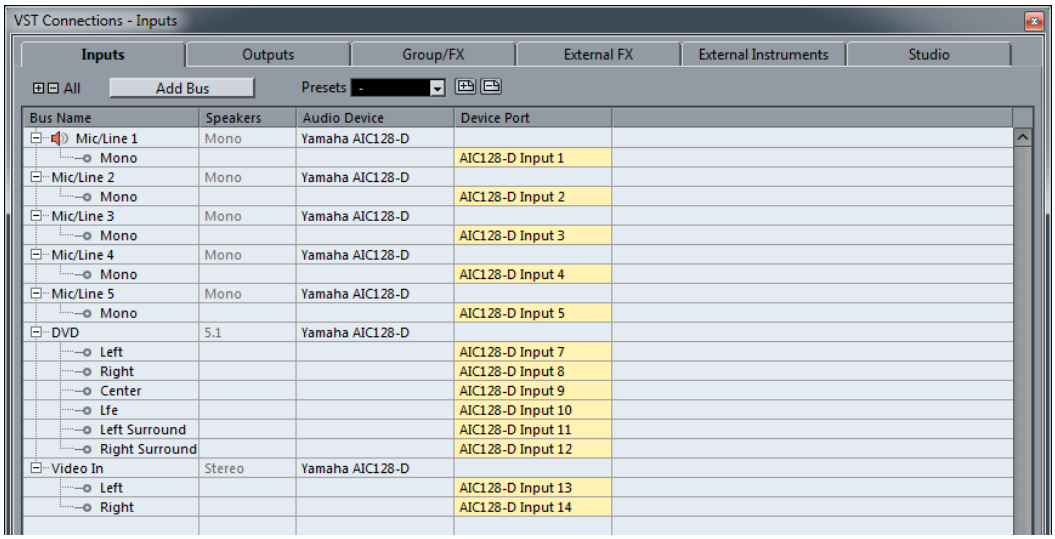


【Add Bus】

You should see the following once you have added the input channels.



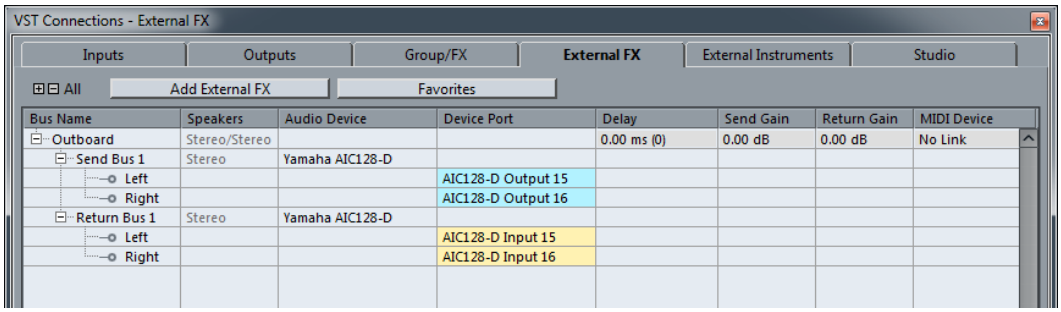
The mic/line inputs have been patched to each of the Dante Accelerator's input channels (AIC128-D Input 1-5). Follow the same method to add 5.1 channels for a DVD player, and for a stereo video recorder.



【VST Connections Inputs】

External FX Tab

Here, the Outboard inputs are assigned to channels 15/16, but because this is being used as a send/return external effect, do not patch them from the Inputs tab, patch them from the External FX tab..



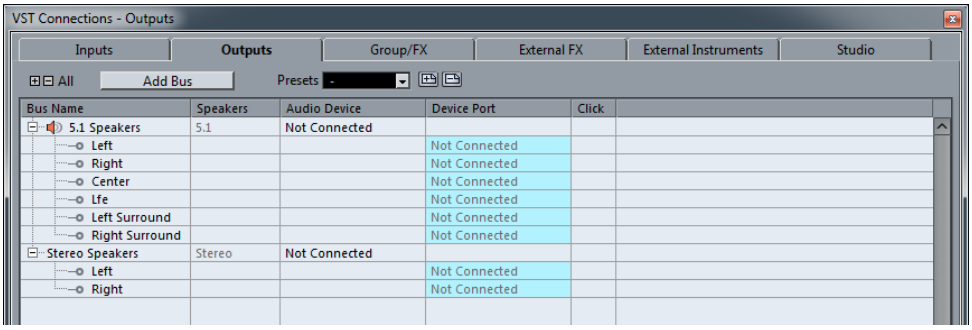
Outputs Tab

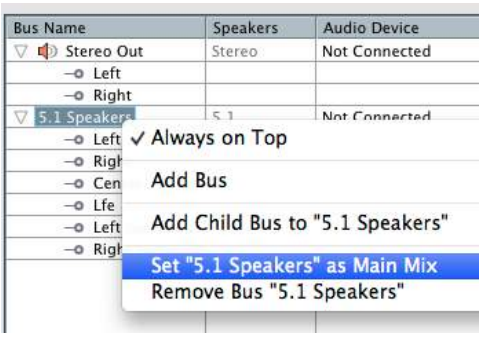
Next set the output channels. Start by creating a bus under the Outputs tab.

Tip:

The speaker configuration (5.1, stereo, etc) used for monitoring in the control room must be defined under the Outputs tab as the main mix. Separately from the speakers (5.1, stereo, etc) added under the Studio tab, create a bus under the Outputs tab, and set that as the main mix. By setting the Audio Device and Device Port to "Not Connected," you can define a bus that has no physical output. The orange icon indicates the current main mix. If 5.1-channel sound is not selected, right-click on the bus name and choose "Set '5.1ch Speakers' as Main Mix."

Under the Outputs tab, do not set up the same device names and device ports that you did under the Studio tab. There is a danger of unexpectedly loud volume from double-patching.

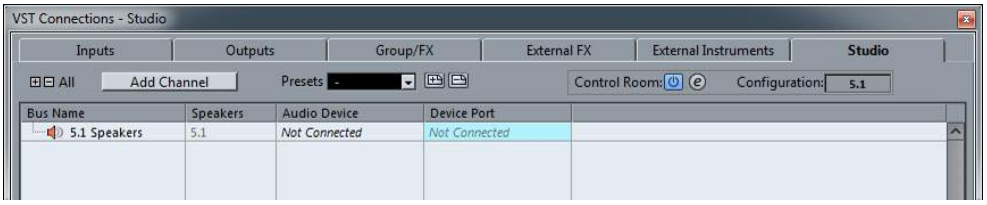




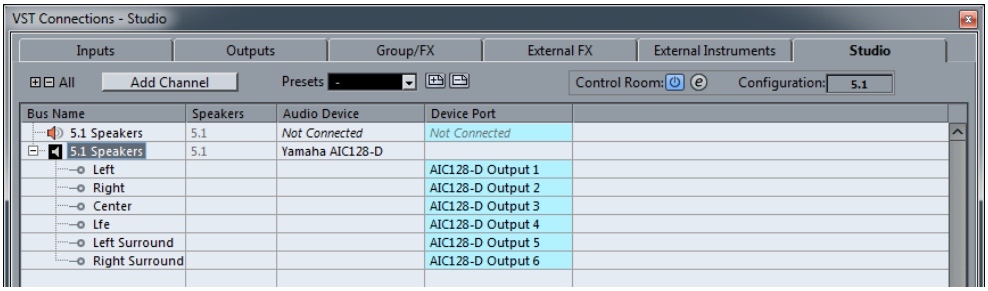
【Define Main Mix】

Studio Tab

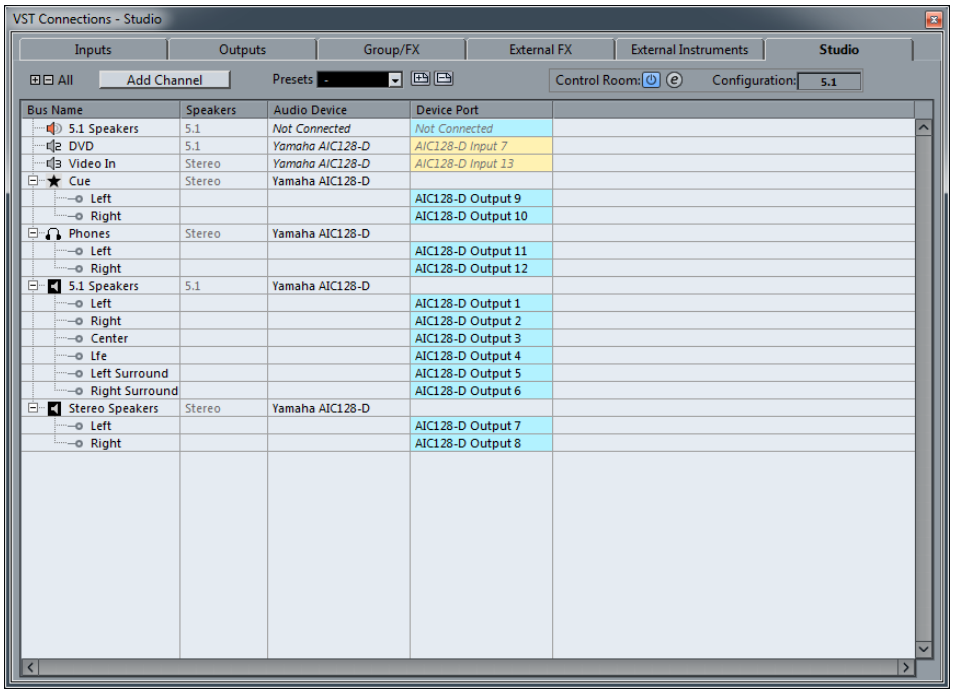
Setting the main mix, makes it so that the designated bus (5.1 speakers) will appear under the Studio tab (it cannot be changed here).



The speakers that you actually use to listen to sounds in the control room are defined as "Monitor" under the Studio tab. Here, add the 5.1 speaker system, and patch the Dante Accelerator's output.



Add the stereo speaker system, stereo cue for artists in the studio, and headphones for monitoring in the control room in the same way. Also, to hear sound from DVD players or video recorders playing in the control room, add their input channels as Monitor Sources. This completes setting up VST Connections.



【VST Connections - Completed】

TIPS：

When using the Control Room function, it is necessary to turn on the Control Room. To turn on Control Room, click the power switch botton to turn on the green light on Control Room in VST Connections or Control Room Mixer screen

Tip:

In some cases, even if you play back a 5.1-channel project, you will only be able to hear it as left/right stereo. This is because, even with the control room's main mix set to 5.1ch, it is converted by MixConvert so that it can be monitored in stereo. To find out what channel format will be used for playback in the control room, check the Control Room section of the Control Room Mixer window. Here, if "5.1 > Stereo" is shown, 5.1-channel sound will be converted to stereo.

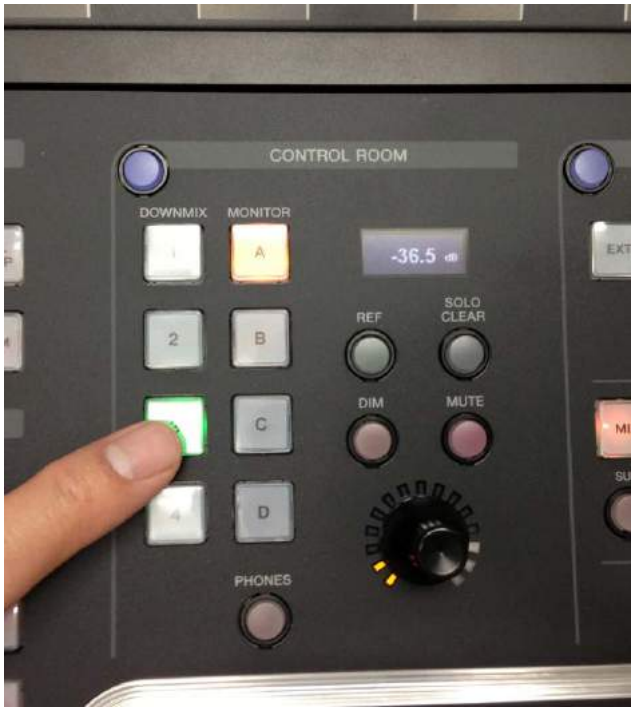
【Control Room Mixer (Control Room)】

Tip:

To change this, click the right-most button under "Speakers" in the Control Room Mixer window to open MixConvertV6, then click the downward-pointing triangle next to Stereo at the top to select 5.1 channels.

【Control Room Mixer】 【5.1 -> Stereo】 【5.1 -> 5.1 (pass through)】

The above changes can be made in the Nuage Master's control room. Switch the downmix to set 5.1ch > 5.1ch.



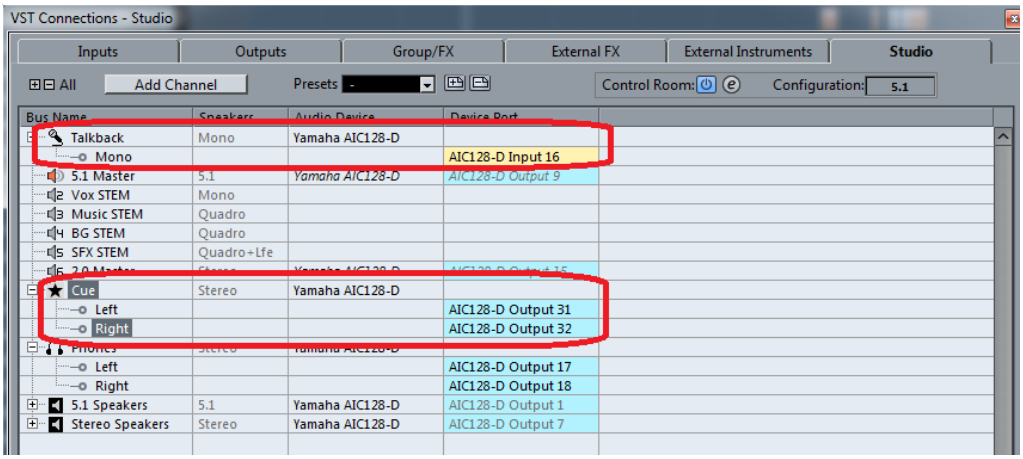
【Control Room on Nuage Master】

TIPS：

To make the changes, click the first button from the right-hand side on speaker in the Control Room Mixer window to open MixConvertV6, and choose 5.1ch by clicking the triangle button on the right-hand side below the Stereo on top.

Talkback、CUE Setup

Setup the input for Talkback and output for CUE respectively.



【Talkback/CUE patching on VST Connections】

The Talkback button on Nuage Master and Mute button on CUE will be activated.

【CUES/COMM section on Nuage Master】

TIPS：

When add Talkback and Cue on VST Connection, the Talkback button, the Mute button on CUE and Signal indicator will be active as shown in above fig. (The above fig shows CUE 1-3 after setup, CUE 1 & 3 with Mute on while CUE2 is off.)

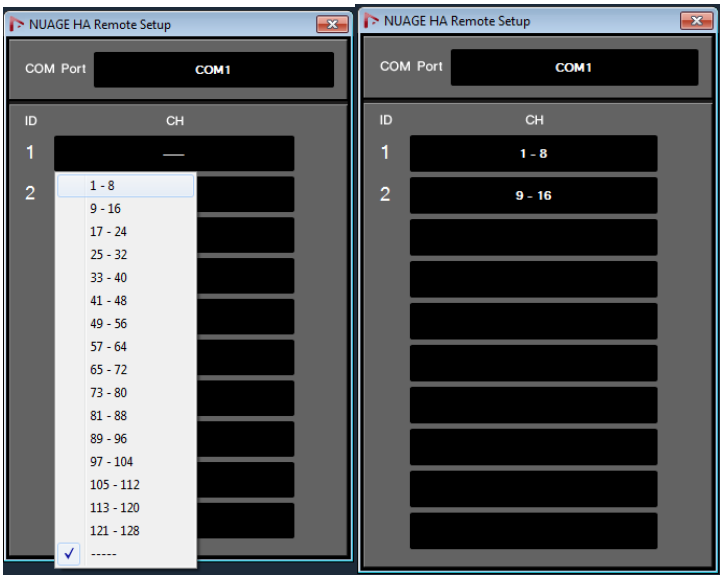
6-12. HA Remote settings with AD8HR

Here we will learn how to configure HA Remote settings and remotely control AD8HR units.

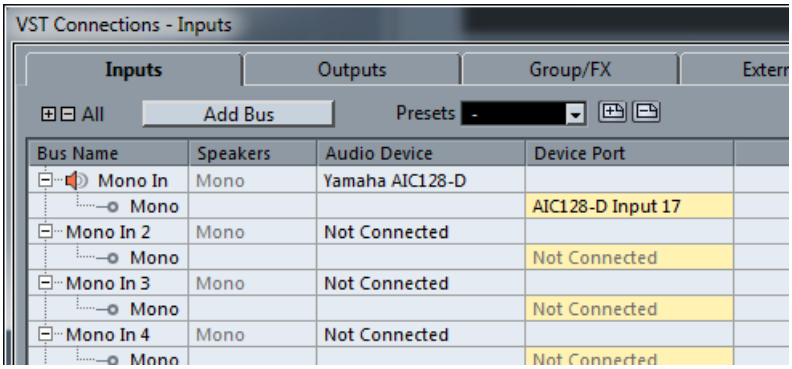
Nuage Remote Setup

First, open "Nuage HA Remote Setup" window from Devices menu of Nuendo (If cables are correctly connected, it will automatically start finding the COM port.

If the COM port is found, either 8 channel group of 8 can be selected for each ID, so select the channel numbers to which each Nuage I/O to which input channel group is connected.



Select a Nuage I/O input channel to which either AD8HR is connected, press "PRE" and "2" on the Section Control and "HA GAIN" and "HA TRIM" parameters are displayed on the Nuage Fader screen.



Configure all the remaining input channels on VST Connections and they are displayed and can be controlled from Nuage Fader.

TIPS:
The only parameters that can be displayed/controlled are "HA GAIN" and "HA TRIM". If you want to change more parameters such as HPF (High Pass Filter) on/off and frequency, and +48V on/off, press "e" button for each channel to open Channel Settings window. Also, the parameter bar for HA Gain moves to the opposite side, however, this is due to the spec of AD8HR.

6-13. Connecting R Series units

R series, analog – Dante converter, can be connected to Nuage and it can control various head amp-related parameters (Version 1.5 or later). Although R series are not recognized and displayed in the Workgroup Manager, HA remote control can be done by adding the input channels on Nuendo that have been patched on Dante Controller.

The R series models that can be controlled are:

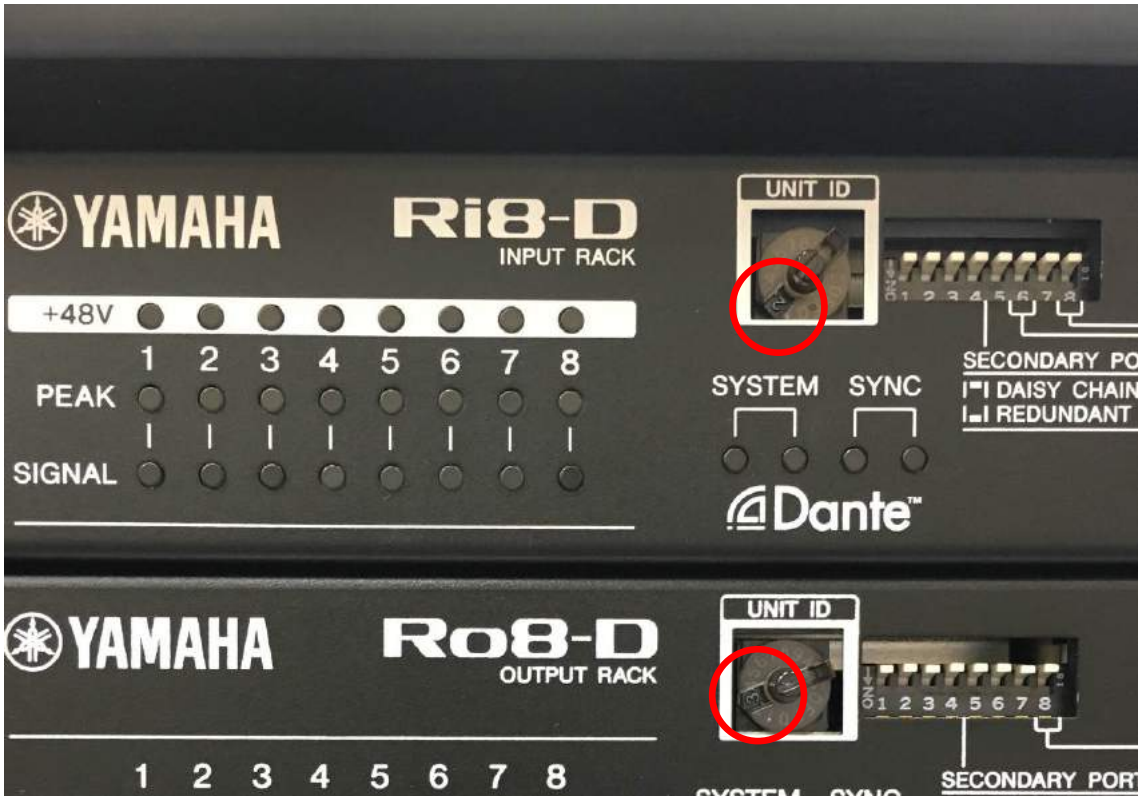
- Rio3224-D
- Rio1608-D
- Ri8-D

The parameters that can be controlled are:

- HA Gain (gain level)
- HA GC (gain compensation)
- HA On/Off (head-amp on/off)
- HA HPF (high pass filter)
- HA +48V (phantom power on/off)

【R series(Ri8-D/Ro8-D(n/a)/Rio1608-D/Rio3224-D from top down)】

Assign a Unit ID number to each unit using the front rotary switch so they are unique and not overlapped



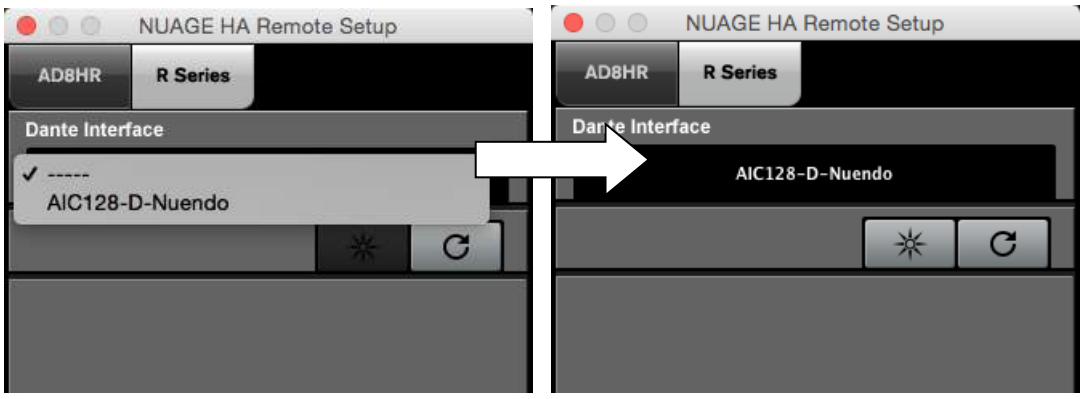
【Assign a unique UNIT ID to each unit】

Connect the Dante connector of R series to the network switch.

TIPS：

R series units will not appear on the Workgroup Manager, even if they are correctly recognized by the system. That is no problem. As described below, if you have patched those Dante channels on Dante Controller to Nuendo input channels on VST Connections, they will appear on the Fader unit screen and become controllable.

Open Nuage Remote HA Setup window from Devices menu on Nuendo, move to R Series tab and select the Dante Accelerator card in use (or a DVS.)

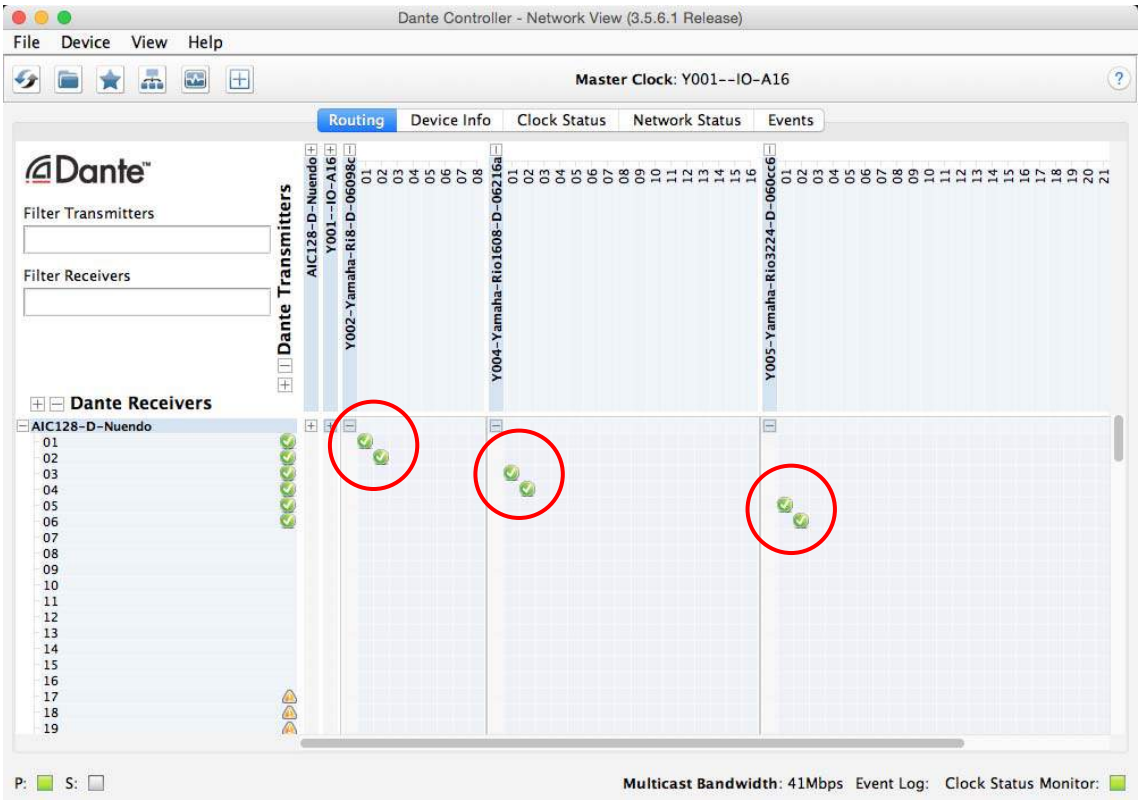


【Nuage HA Remote Setup window】

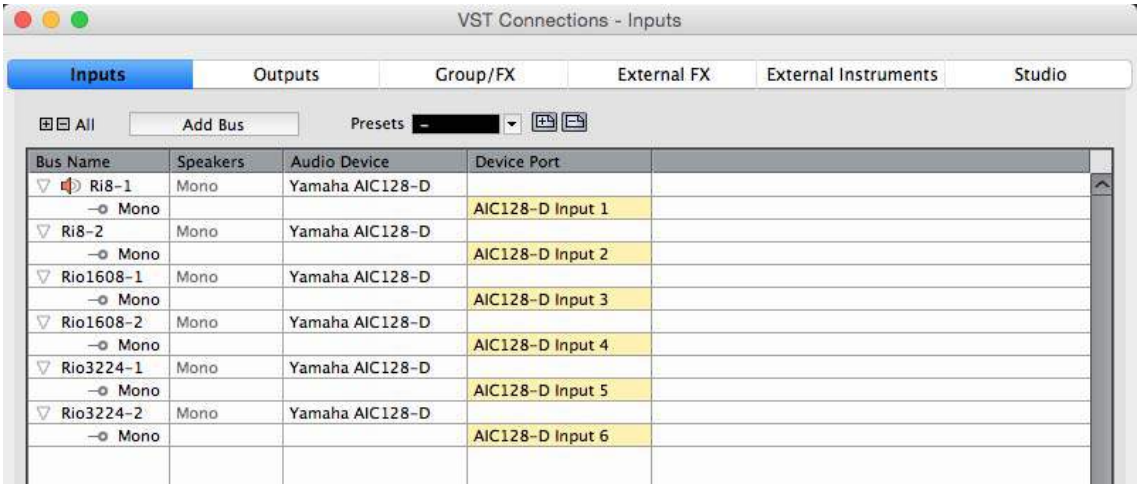
TIPS：

The area below the Dante Interface box are empty, simply because the height needs to be consistent with the adjacent AD8HR page. Nothing will appear in this area in any condition.

Next, on the Dante Controller, patch each Dante output from R series unit to the Dante input channels of Dante Accelerator. In this example, two outputs from each R unit are patched to total six input channels of Dante Accelerator.



Then, on the Inputs tab of VST Connections window, assign those input channels of Dante Accelerator card to the input channels of Nuendo (as shown below) by adding input busses and assigning the input port of Dante Accelerator card to each bus.



Bus Name	Speakers	Audio Device	Device Port
Ri8-1	Mono	Yamaha AIC128-D	
Mono			AIC128-D Input 1
Ri8-2	Mono	Yamaha AIC128-D	
Mono			AIC128-D Input 2
Rio1608-1	Mono	Yamaha AIC128-D	
Mono			AIC128-D Input 3
Rio1608-2	Mono	Yamaha AIC128-D	
Mono			AIC128-D Input 4
Rio3224-1	Mono	Yamaha AIC128-D	
Mono			AIC128-D Input 5
Rio3224-2	Mono	Yamaha AIC128-D	
Mono			AIC128-D Input 6

Now the inputs from R series are connected to Nuendo and the HA remote can be controllable. In the SECTION CONTROL area of the Nuage Fader unit, press PRE button.

【Nuage Fader unit Section Control】

By default, the PRE section of Nuendo will appear, but by pressing 4 or 5 button in the Section Control are described the above, the HA remote of R series becomes controllable.

【PRE section – screen #4】

Here are the parameters that can be controlled.

HA GAIN – adjust the HA gain level

HA GC (Gain Compensation) on/off – to prevent from unexpected gain level changes, this allows the output level to keep consistent no matter how you change the gain level locally. If turned on, the output level from R series is fixed.

【PRE section – screen #5】

HA HPF – Turn on/off the high pass filer and set the cut-off frequency for each channel of R series units.

HA +48V – Turn on/off the phantom power for each channel of R series units. For security reasons, you have to press and hold this button for turning on the phantom power.

TIPS：

If you accidentally provide phantom power to microphones that do not require it such as passive type ribbon microphones, it may damage or break the microphone. Please make sure before you turn on the phantom power.

Also, if you press “e” button on each channel of Fader unit, the channel edit screen including the HA section will appear and you can control from that. Try to connect a microphone or an audio playback device, bring up the gain level and see if the input level will change.

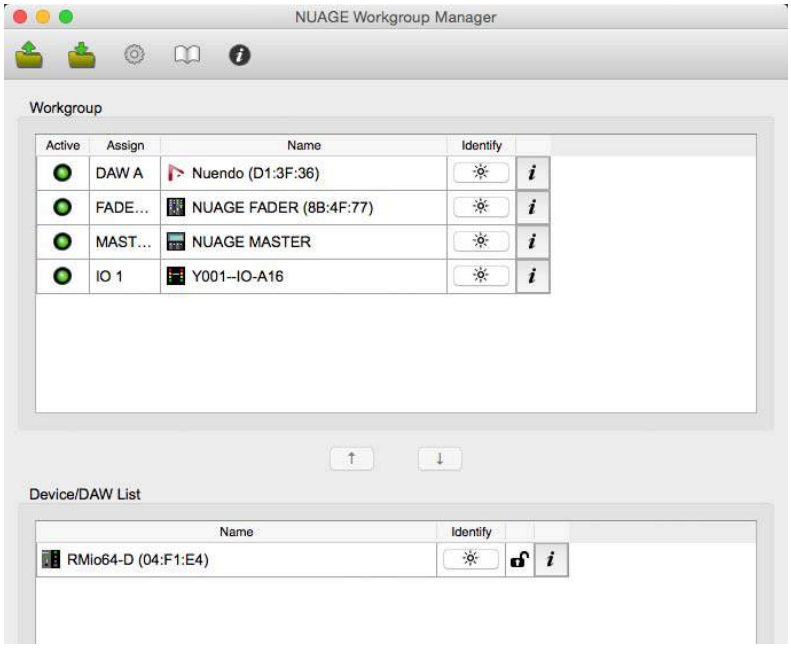
【Mic signal check】

6-14. Connecting RMio64-D

RMio64-D, Dante-MADI converter, can be connected to Nuage and change various parameters on Nuage Workgroup Manager. RMio units will be recognized as “I/O” and up to total eight Nio and RMio units can be controlled (Version 1.6 or later.)

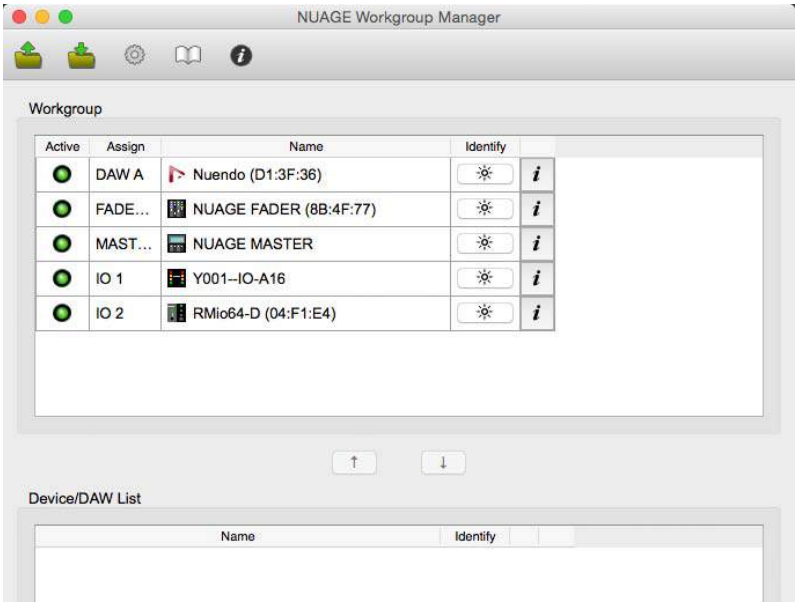
【RMio64-D Rear Panel】

When an RMio unit is connected to the network switch, it is recognized and displayed on the Device/DAW List of Workgroup Manager.



【Nuage Workgroup Manager】

Without adding the unit to the Workgroup, only “Identify” works and configuration window cannot be open until the RMio unit is added to the Workgroup, by pressing the uparrow button between the both lists.



6-15. Connecting GPIO units

GPI boxes by JL Cooper Electronics (hereinafter called JLC) can be connected to Nuage, by which Nuage Master can receive GPI trigger signal and, on the contrary, Nuage Master can send GPIO signal (Version 1.7 or later).

What is GPI (GPIO)?
GPI, or General Purpose Interface, (GPIO, or General Purpose Input / Output) is a general interface for controlling external devices by using the voltage change. In case of Nuage, this may be used for external devices such as a “RECORDING” sign and external talkback button and so on.

About JLC GPIO products
JLC’s eBOX series are interfacing boxes for converting GPI (General Purpose Interface) input / output signal to Ethernet signal. Currently, up to tour units of the following two models can be connected and controlled.

- eBOX
- eBOX GPI8

【JL Cooper eBOX】

【JL Cooper eBOX GPI8】

First, connect the ETHERNET connector of eBOX and the network switch using CAT cables.

Next, open Nuage MASTER Setup window from Device menu of Nuendo, move to GPIO tab and set and IP address for Nuage Master. If possible, use the following unique IP address. IP address can be directly typed in the textboxes.

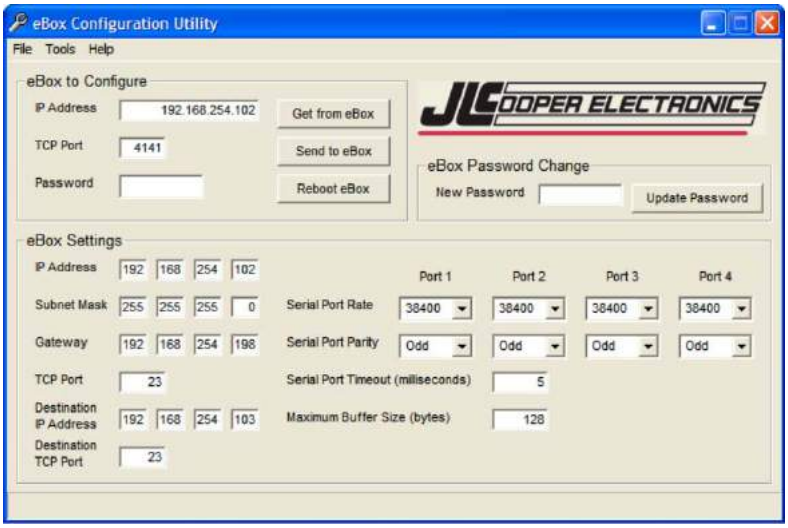
Nuage Master	192.168.254.103
eBOX	192.168.254.102
eBOX GPI8	192.168.254.104

【Nuage MASTER Setup – GPIO - Device】

The IP address can also be set by using the DIP switches on the rear panel as well as the bundled app.

【DIP switches – rear panel】

IP address	SW1	SW2	SW3	SW7
192.168.254.102	OFF	OFF	OFF	OFF
192.168.254.103	OFF	OFF	OFF	ON
192.168.254.104	ON	OFF	OFF	OFF
192.168.254.105	ON	OFF	OFF	ON
192.168.254.106	OFF	ON	OFF	OFF
192.168.254.107	OFF	ON	OFF	ON



【eBOX Configuration Utility】

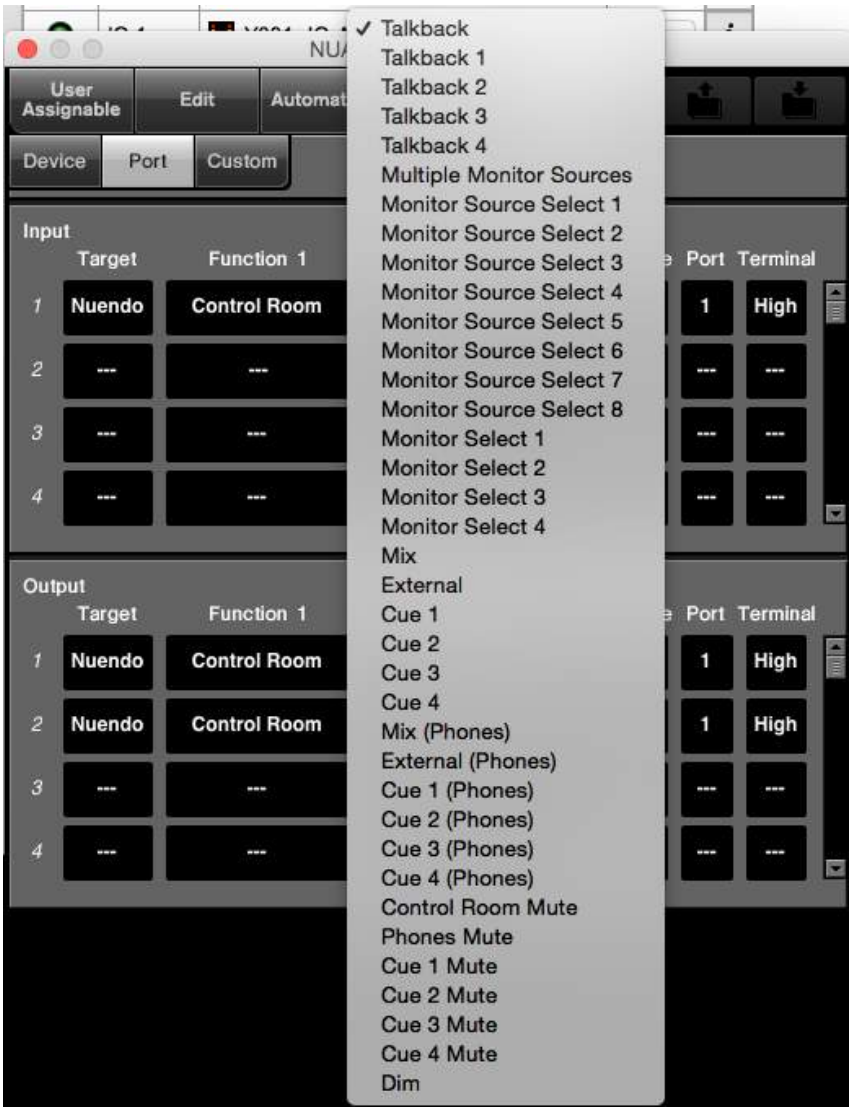
When the IP address is correctly set, the link status and packet send/receive status are indicated on the front panel of eBOX.

【Status indicators】

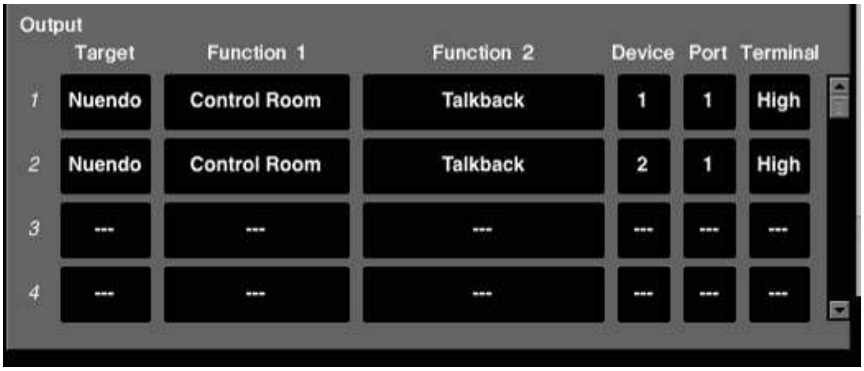
TIPS：

Like R series, eBOX is not displayed on Nuage Workgroup Manager even when connected and recognized, which is no problem.

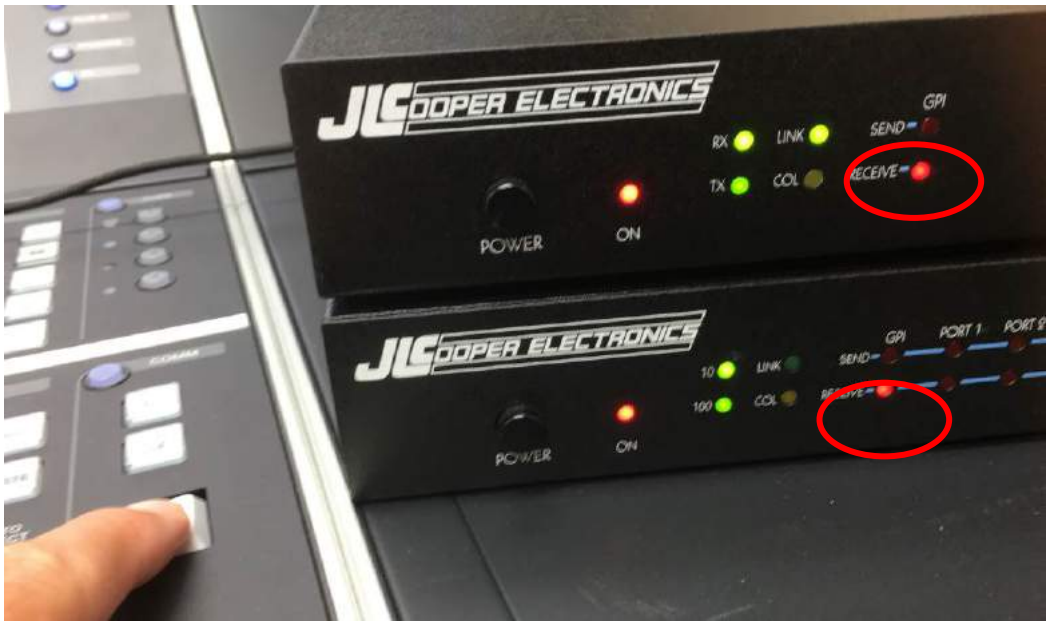
Below is an example in which you press Talkback button on Nuage Master and see if eBOX receives GPI signal from the Master. In the Output area, select “Nuendo” as target, “Control Room” as Function 1, “Talkback” as Function2, 1 and 2 as Device respectively, 1 as Port, and “High” as Terminal.



【Nuage MASTER Setup – GPIO - Port】



Now as soon as you press Talkback button on the Master unit, GPI signal is sent out to the eBOX and GPI RECEIVE indicator will light.



If GPI RECEIVE lights as soon as you press the TALKBACK button, it shows it works correctly.

6-16. Connecting and setting up Pro Tools system

The Pro Tools control function of Nuage is compatible to the following two types of Pro Tools platforms:

- Pro Tools HDX system
- Pro Tools Software

In order to synchronize Nuendo and Pro Tools, the following synchronizers are needed:

- Steinberg SyncStation
- Avid Sync HD

However, if your budget is limited and the synchronization using SMPTE timecode is not required, MTC (MIDI Timecode) can substitute. If that's the case, prepare MIDI interfaces and cables.

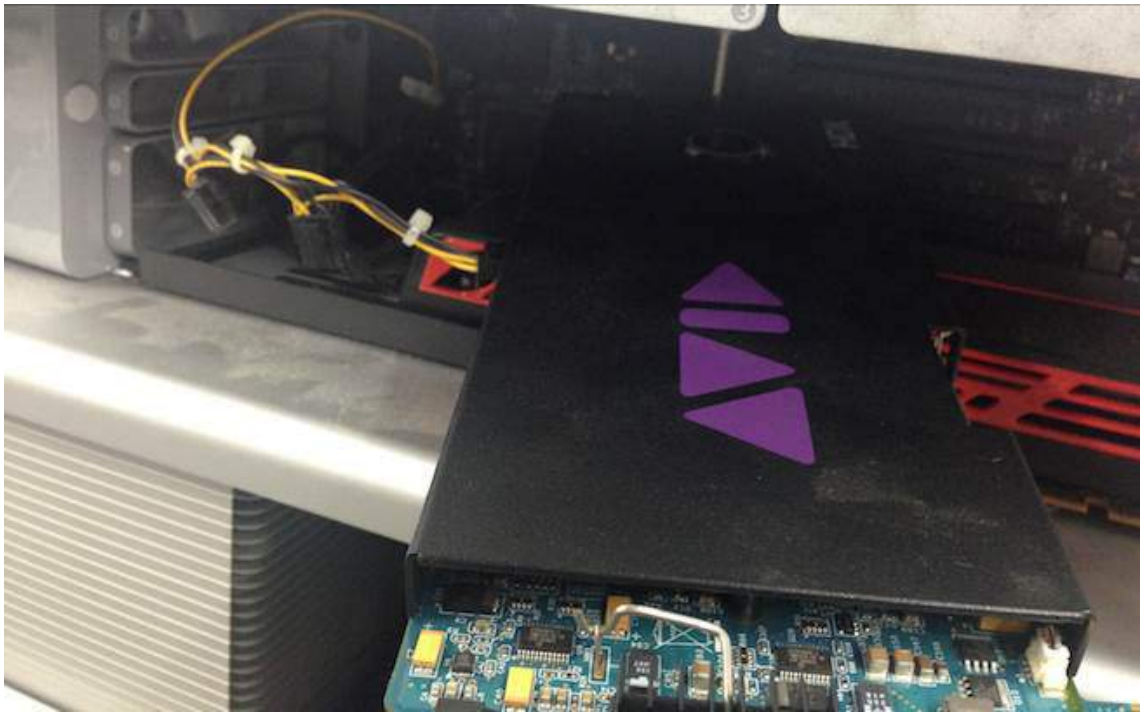
TIPS:
For Mac users, Core MIDI is not tested for this application and we do not recommend that you use the function for the MTC synchronization between Nuendo and Pro Tools.

Pro Tools HDX system configuration example

【Pro Tools System (front) w/ SyncStation】

【Pro Tools System (rear) w/ SyncStation】

Insert HDX card to the PCIe slot of Mac Pro. Before connecting the card to the motherboard, make sure to connect the black and yellow cable to the motherboard.



Using the DigiLink cable, connect PRIMARY PORT on HD I/O and PORT 1 connector on HDX card.

Next, connect Loop Sync (LS) on HD I/O and that on Sync HD, by connecting LS OUT on Sync HD and LS IN on HD I/O and connecting LS OUT on HD I/O and LS IN on Sync HD, using BNC cables.

By using XLR cables, connect TIMECODE OUT on SyncStation and LTC IN on Sync HD. Similarly, connect LTC OUT on Sync HD and TIMECODE IN on SyncStation.

Next, for wordclock synchronization, connect WORDCLOCK A on SyncStation and WC IN on Sync HD, also connect WORDCLOCK B to WC IN on HD I/O.

Connect USB port on SyncStation and an available USB port on the computer.

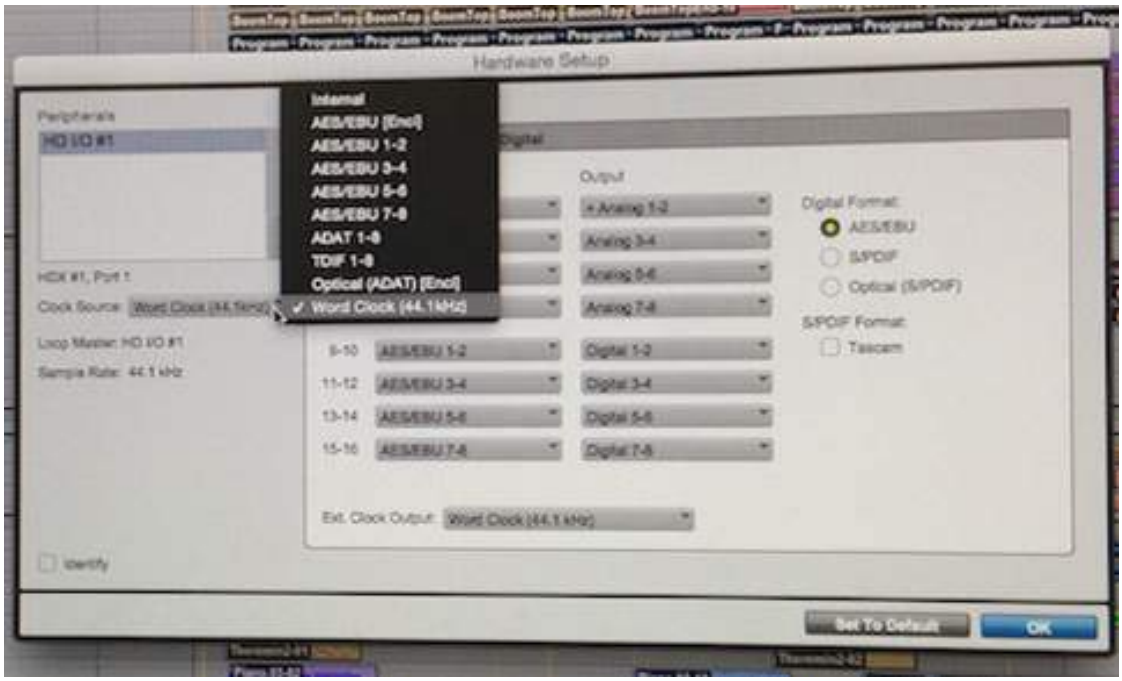
Connect the serial port on HDX card and HOST SERIAL connector on Sync HD using a 9-pin serial cable.

Lastly, connect audio outputs on HD I/O and audio inputs on Nuage I/O.

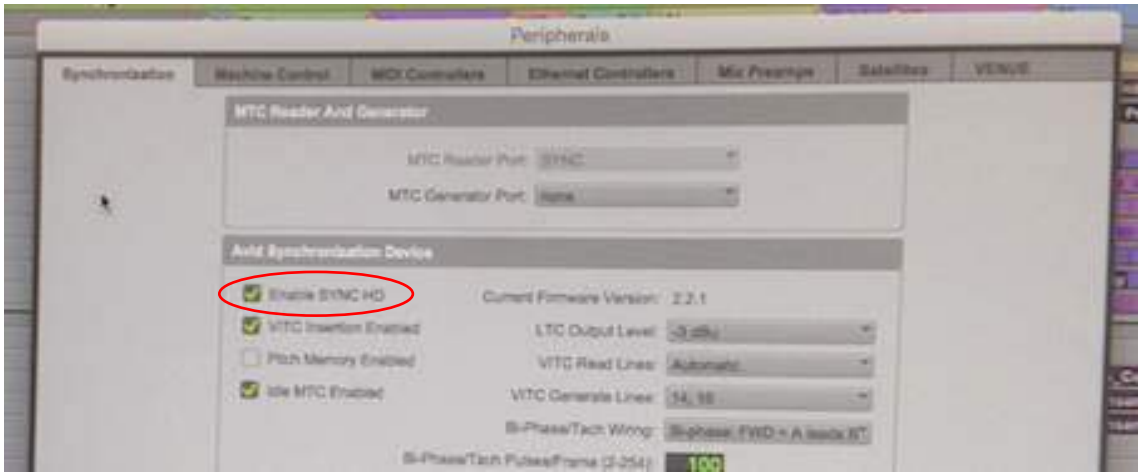
Synchronization Settings

TIPS:
In this scenario, Nuendo and Pro Tools are synchronized by using SMPTE Timecode (LTC) where Nuendo (SyncStation) is the clock Master while Pro Tools (Sync HD) is the Slave.

First, configure the Workclock source on Pro Tools. Open Hardware Setup window and, in the ClockSourse" area, chose "Wordclock (xx.xxkHz)".

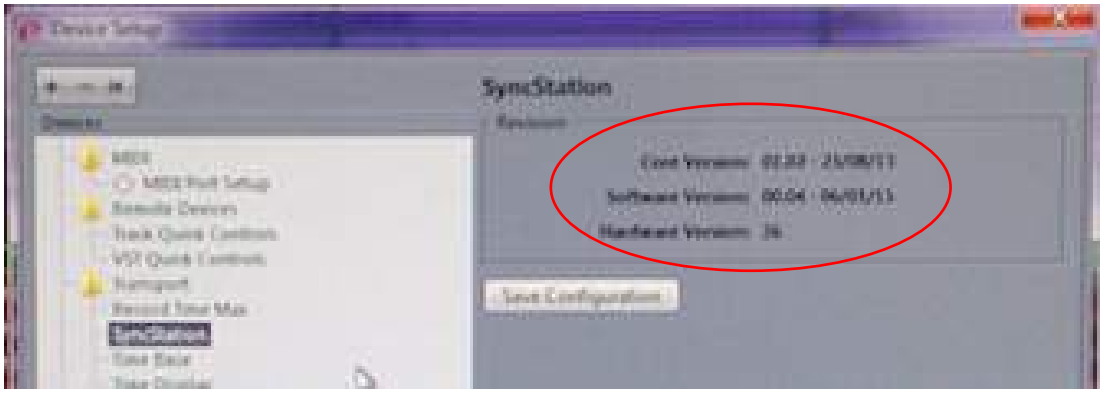


Next, enable Sync HD. Open Peripherals window, move to Syncronization page and check “Enable SYNC HD”



Make Pro Tools “online” (make chase-able as Slave). Click on the Sync button on the transport. Now Pro Tools is waiting for the LTC signal coming in.

Next, configure the Nuend system. Open Device Setup window and choose SyncStation. If the Revisioin numbers are shown, the SyncStation is correctly recognized.

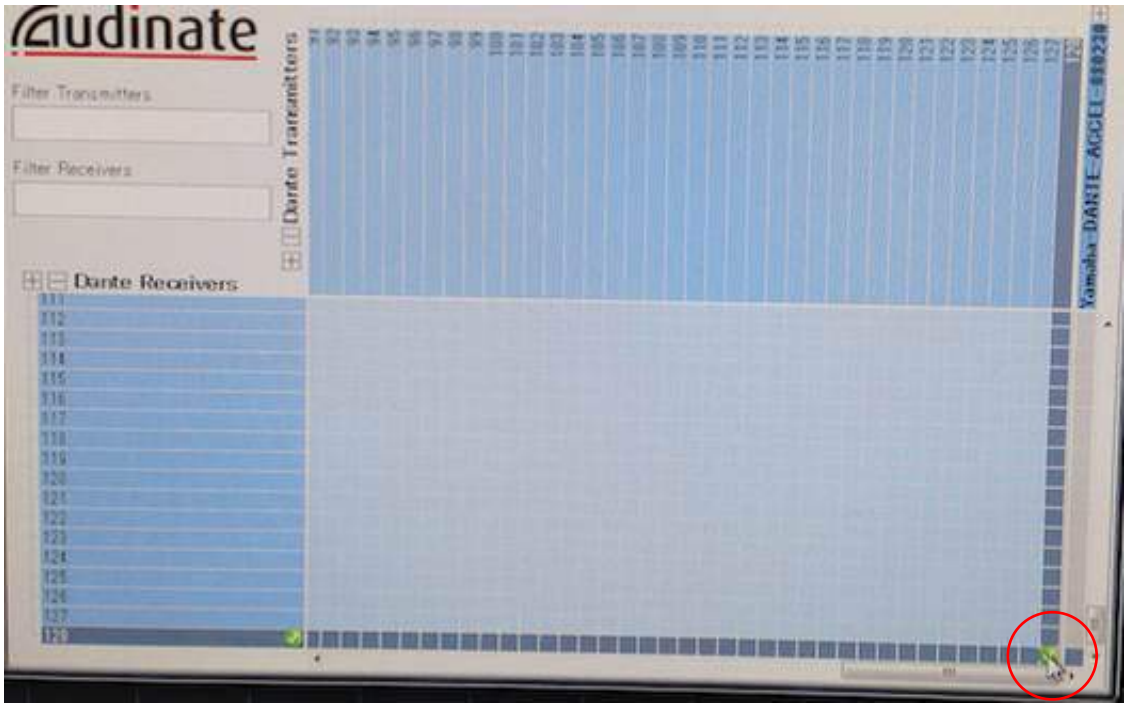


Now, play back a Nuendo project and see if another project on Pro Tools will work in sync by the same time code.

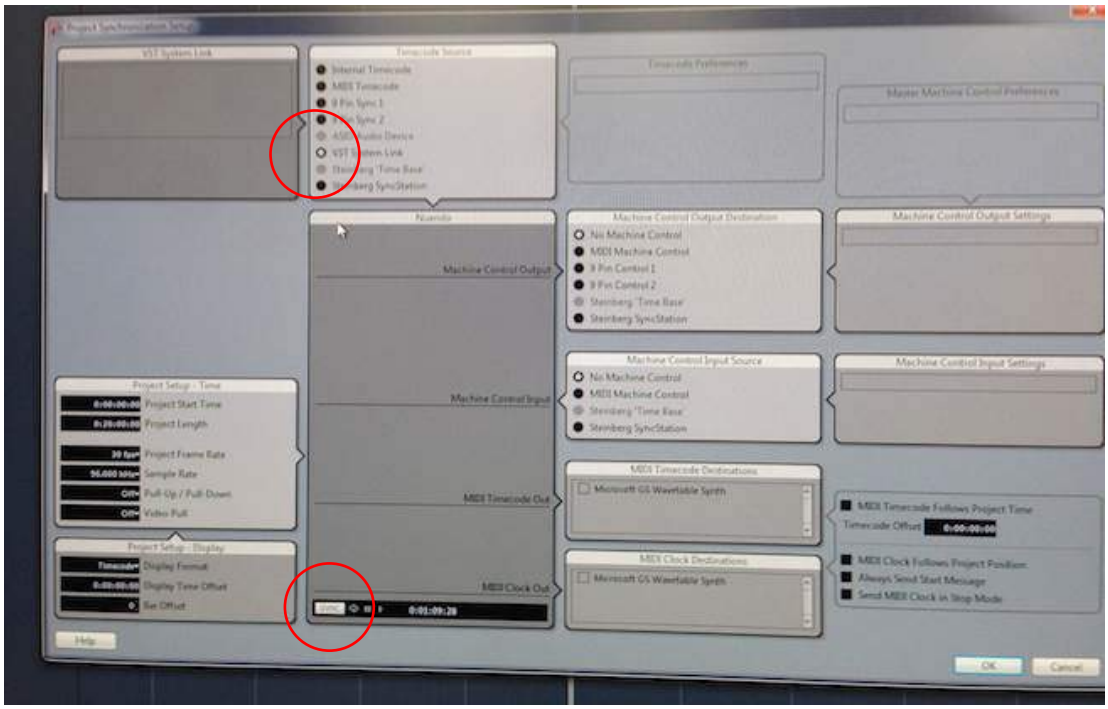
Reference: Synchronization between Nuendo and Cubase

TIPS：
For Nuendo/Cubase synchronization, VST System Link will need to be used. When locked via VST System Link, the synchronization is bi-directional so the transport can be controlled from both platforms. Below is a description of how to set up Nuendo/Cubase with VST System Link

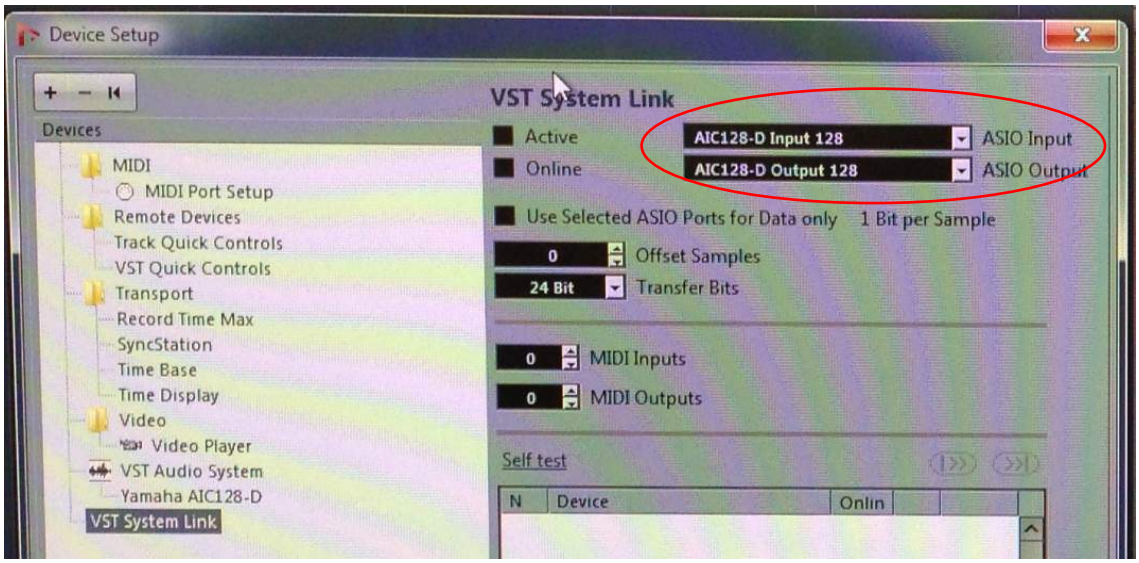
In order for Nuendo and Cubase to synchronize via VST System Link, one digital input and output channels are needed. In this scenario, we'll use Dante network and use one input and output channels of Dante Accelerator cards of both platforms. On Dante Controller, patch the ourput #128 of Nuendo to the input #128 of Cubase. Similarly, patch the output #128 of Cubase to the input #128 of Nuendo.



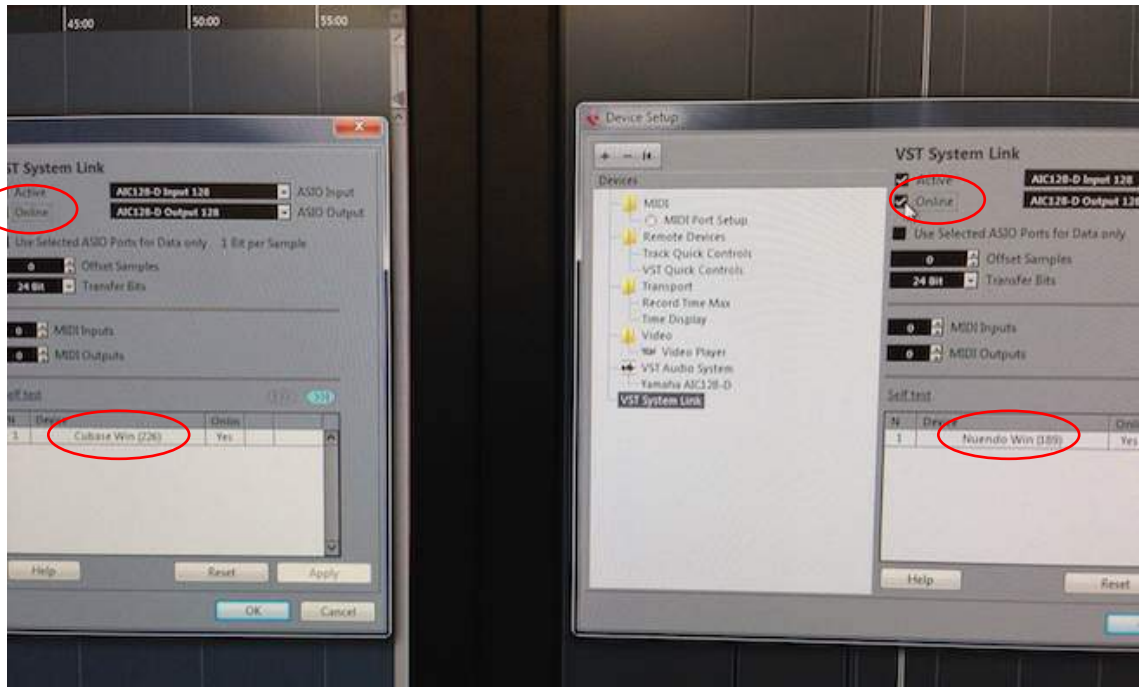
Open Project Synchnorization Setup on Nuendo, choose “VST System Link” in the Timecode Source area, and press “SYNC” button below that area. Do the same thing on the Cubase side as well.



Next, open Device Setup windows and move to VST System Link page. Choose the Dante input and output channels that you have patched on Dante Contrller earlier. Do the same thing on the Cubase side as well.



Check “Online” and the other DAW will appear on the both platforms.



Now Nuendo and Cubase are locked. Playback a project on one platform and see if it works on the other platform.

TIPS：

In this scenario, Nuendo is always the Master while Pro Tools is always Slave so, even if you playback a session on the Pro Tools side, it always will be brought back to the Nuendo time position. Switching DAW on the Nuage control surface does not change that. In order to control Pro Tools independently, press SYNC ONLINE button to make the Pro Tools offline.

TRANSPORT
EDIT
PRE ROLL
POST ROLL
PUNCH IN
PUNCH OUT
CYCLE
SYNC ONLINE
OBJECT SELECT
RANGE SELECT
LEFT
RIGHT
PREV EVENT
NEXT EVENT
MEM
ZAP
CUT
COPY
— SET TO SELECTION —
SNAP
AUTO SCROLL
SHUTTLE
SCROLL
SCRUB
FADE IN
VOLUME
FADE OUT
TRIM
SPLIT
TRIM

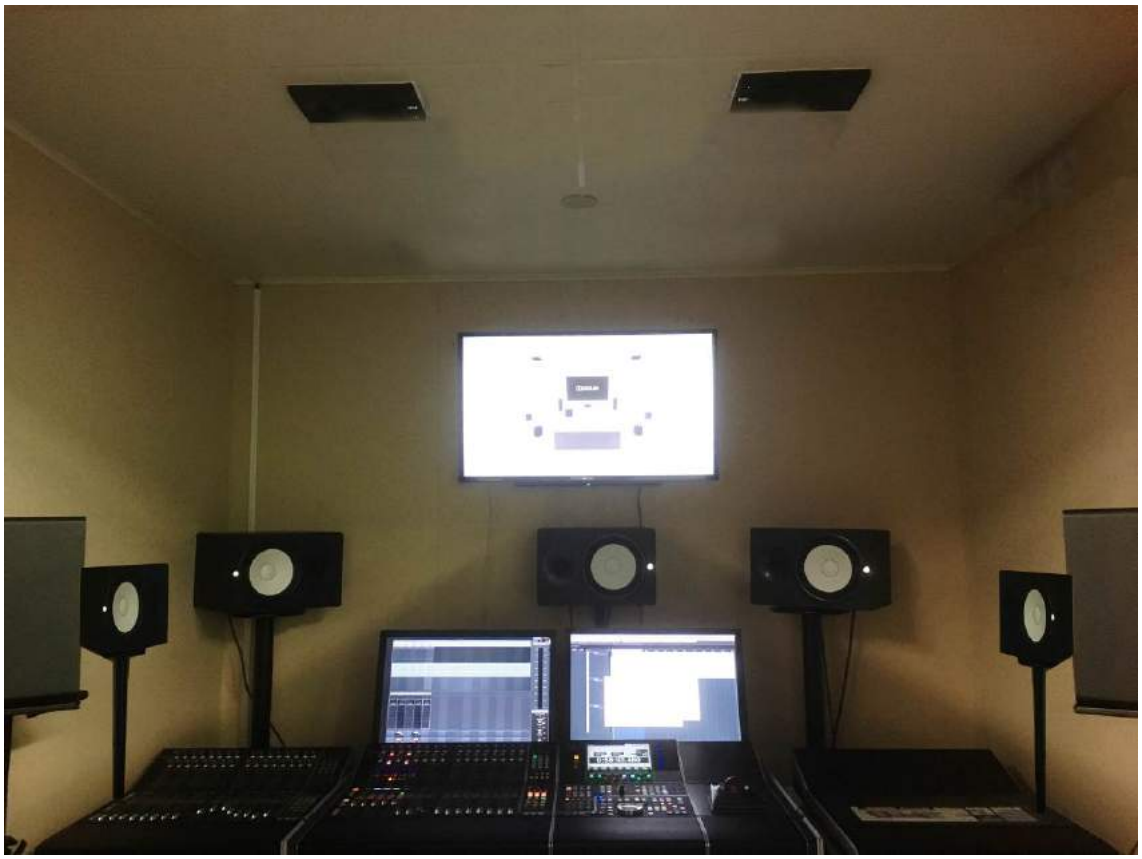
14| 4| 240
1392300

6-17. Setting up and configuring Dolby Atmos environment using VST MultiPanner

Nuendo is capable of handling busses compatible with Dolby Atmos 9.1ch format (Nuendo 7,1 and later), and those Atmos channels can be controlled from NUAGE Fader/Master (NUAGE V1.8).

Speaker placement

Dolby Atmos 9.1ch bus is available with Nuendo7.1, and below is an example of speaker placement for monitoring Dolby Atmos 9.1.



【Ex. Dolby Atmos 9.1 (7.1.2) Speaker Placement】

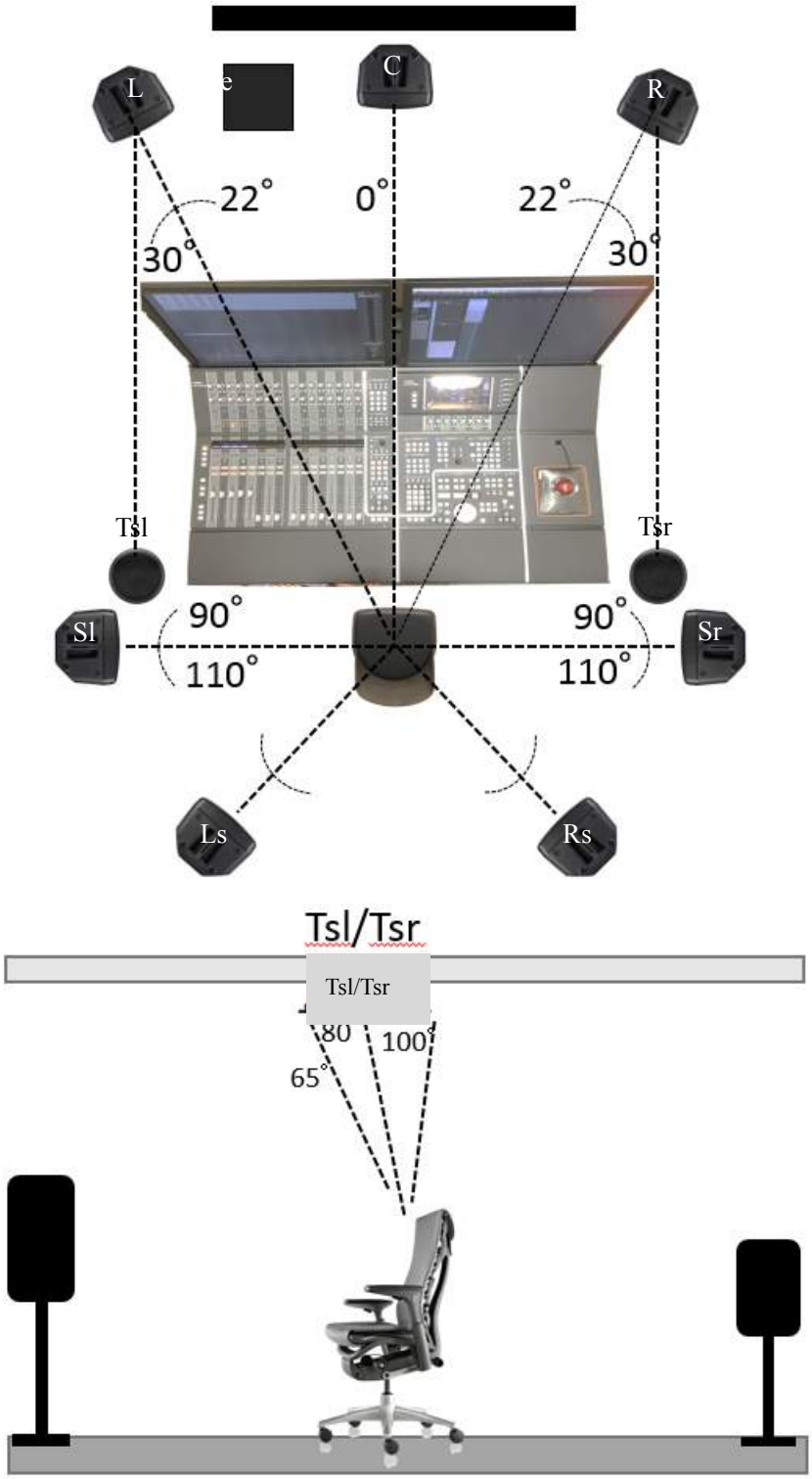
【Front Speakers [Left, Center, Right]】

【Side/Rear Speakers [Left Surround/Side Left]】

【Ceiling Speakers [Top Side Left/Top Side Right]】

【Subwoofer [Lfe]】

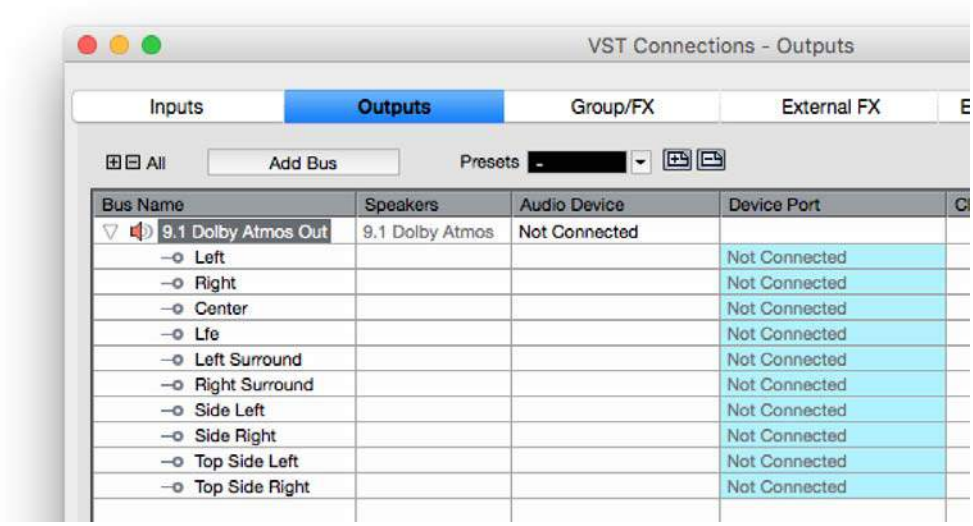
The diagram below shows an example of the angle of each speaker and its distance from the listening position.



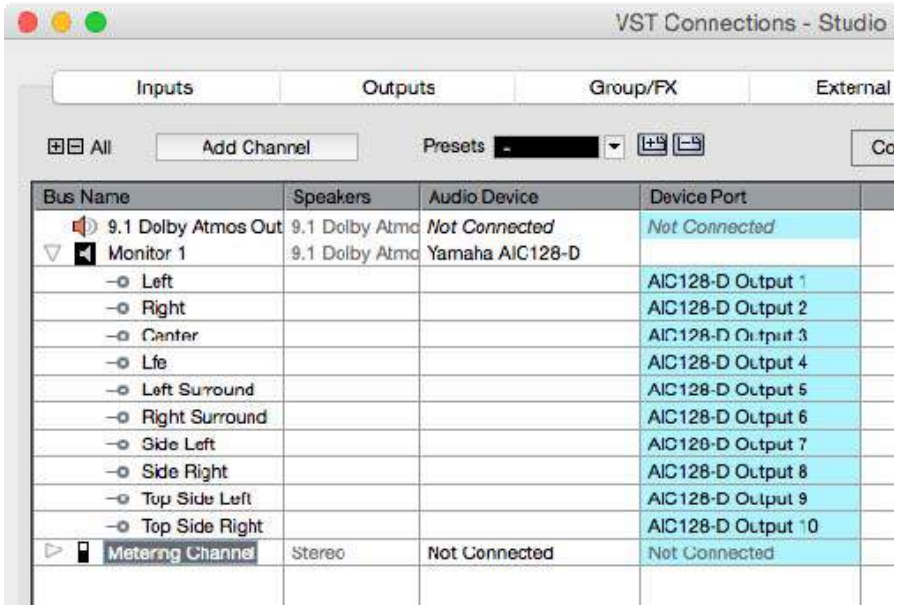
【An example of speaker placement against the listening position】

Configuring VST Connections

Open the VST Connections window, select the Outputs tab, and create a 9.1 Dolby Atmos Out bus. Please note, Device Port settings should be left “Not Connected” because, if you directly set the Device ports here, you won’t be able to control speaker volume or mute via Control Room, which may damage your speaker system.



In the Studio tab, add a Dolby Atmos 9.1 monitor bus and assign the output channels to each speaker. Here, assign the output channels of Dante Accelerator card which are patched to each output channel of NUAGE I/O.



When the bus is correctly configured, it appears on the NUAGE Fader screen as below.

【9.1 Dolby Atmos bus on NUAGE Fader】

If you create a mono/stereo/5.1/9.1 Atmos track, you will see the pan position of each track on the NUAGE Fader screen as below.

【Pan section on NUAGE Fader】

Up to two parameters can be displayed and controlled on the Fader screen at the same time, but you can access more parameters by switching the Section Control button 1-8

【NUAGE Fader Section Control】

【Section Control = 1】

【Section Control = 2】

【Section Control = 3】

【Section Control = 4】

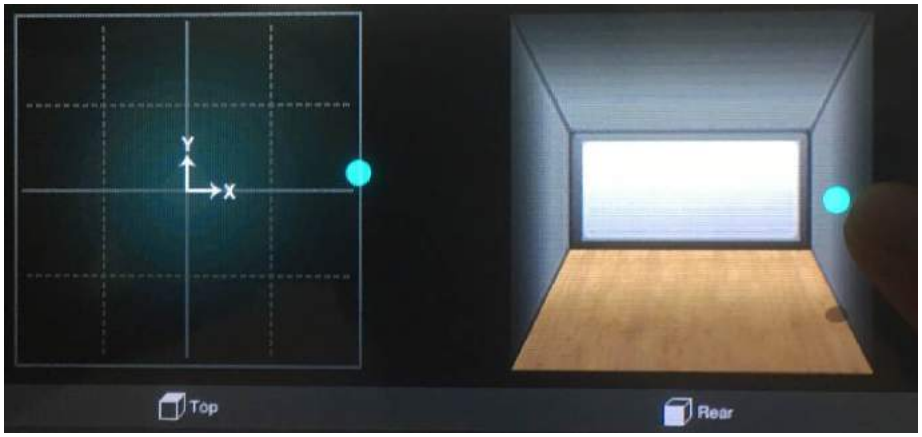
【Section Control = 5】

【Section Control = 6】

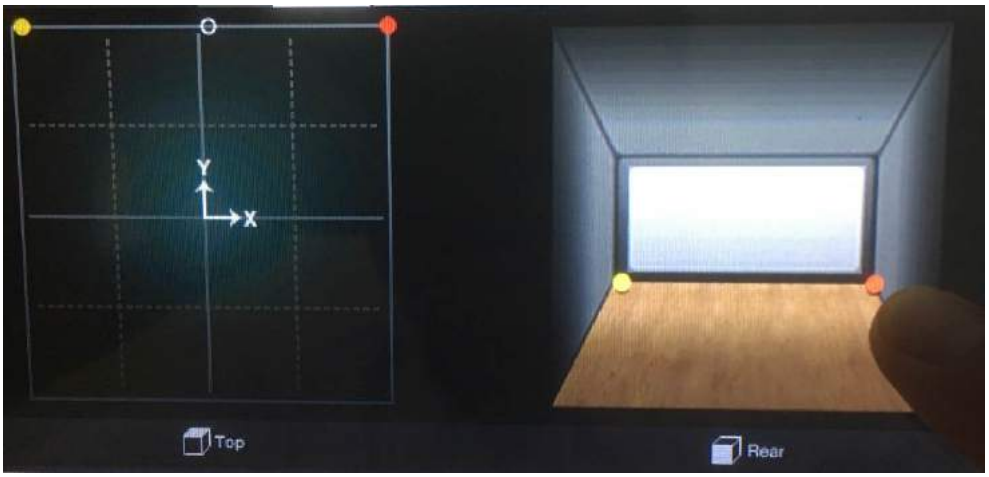
【Section Control = 7】

【Section Control = 8】

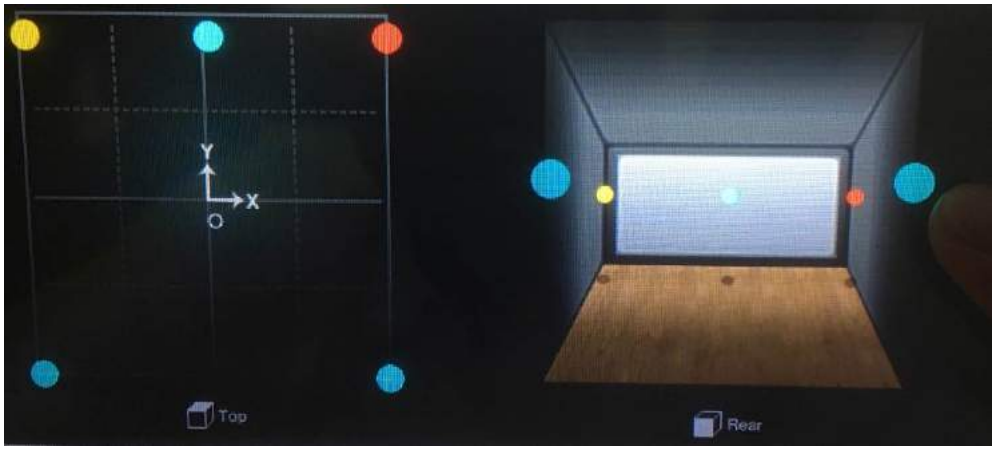
On the NUAGE Master Touchscreen, Dolby Atmos panning can be performed more intuitively by simply dragging the color balls or turning the knobs.



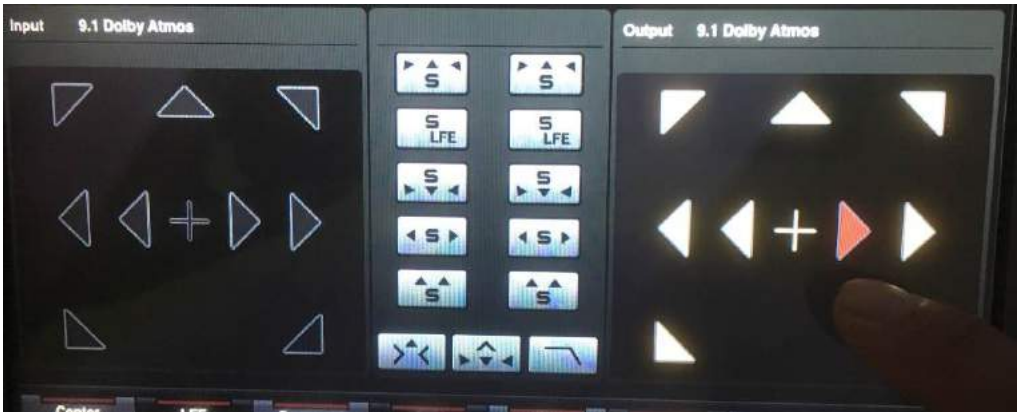
【Dolby Atmos on NUAGE Master (Mono)】



【Dolby Atmos on NUAGE Master (Stereo)】



【Dolby Atmos on NUAGE Master (5.1)】



【Dolby Atmos on NUAGE Master (9.1 Dolby Atmos)】

TIPS：

Thus far, we have outlined how to configure the panning of Bed channels. In order to pan the Object channels, you must obtain an RMU unit from Dolby, and install the RMU Connection Kit for Nuendo. For details, please refer to Mixing with VST MultiPanner document.

【VST Multipanner Object mode】