

SAVANT

Savant® IP Audio Music Server

Deployment Guide

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Document Supports: da Vinci 8.8 or higher

This document will guide the installer through the process of installing, configuring, and adding Savant IP Audio Music Server to a RacePoint Blueprint™ configuration.

- IP Audio Music Server [PAV-SMS2001-XX]

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Important Safety Information - Read First

Before installing, configuring, or operating any equipment, Savant recommends that each dealer, integrator, installer, etc. access and read all relevant technical documentation. Savant technical documentation can be located by visiting Savant.com. Vendor documentation is supplied with the equipment.

Read and understand all safety instructions, cautions, and warnings in this document and the labels on the equipment.

Safety Classifications In this Document

NOTE:	Provides special information for installing, configuring, and operating the equipment.
 IMPORTANT!	Provides special information that is critical to installing, configuring, and operating the equipment.
 CAUTION!	Provides special information for avoiding situations that may cause damage to equipment.
 WARNING!	Provides special information for avoiding situations that may cause physical danger to the installer, end user, etc.

Electric Shock Prevention

 ELECTRIC SHOCK!	The source power poses an electric shock hazard that has the potential to cause serious injury to installers and end users.
 ELECTRICAL DISCONNECT:	The source power outlet and power supply input power sockets should be easily accessible, to disconnect power in the event of an electrical hazard or malfunction.

Weight Injury Prevention

 WEIGHT INJURY!	Installing some Savant equipment requires two installers to ensure safe handling during installation. Failure to use two installers may result in injury.
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Safety Statements

All safety instructions below should be read, understood, and applied under all relevant circumstances when working with this equipment.

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of any polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If any provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect any power cord from being walked on or pinched; particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Use only attachments/accessories specified by the manufacturer, following all relevant safety precautions for any such attachments/accessories.
12. Disconnect any outlet powered apparatus from its power source during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as a damaged power supply cord or plug, liquid being spilled or objects having fallen into the apparatus, the apparatus being exposed to rain or moisture, apparatus having been dropped, or other failure to operate normally.
14. To completely disconnect equipment from AC mains power, disconnect the power supply cord plug from the AC receptacle.
15. For applicable equipment, use the included power cord with the grounding prong intact to insure proper grounding of the device.
16. For any hardwired or fixed in-wall apparatus, carefully follow all wiring diagrams and instructions. All electrical wiring and servicing should be performed by a properly licensed electrician.

1. Before You Begin

Read this document in its entirety before starting deployment of the product, and ensure that the following required items are available:

- Savant IP Audio Music Server.....
- Unique ID (UID) of the Savant IP Audio Music Server
(located on the back of the device)
- Savant Host (Smart or Pro) licensed and running da Vinci software.....
da Vinci version 8.8 or higher
- Savant Development Environment (SDE/MacBook).....
- Ethernet network meeting Savants requirements.....
See [Appendix A: Network requirements](#)

Supported Release

Device	Minimum Supported Release
PAV-SMS2001	da Vinci 8.8

Feature	Minimum Supported Release
Savant Music Trim (System Monitor)	da Vinci 9.2

2. Deployment Steps

To successfully deploy a Savant IP Audio Music Server, follow the steps listed below. This page can be used as a checklist to track progress as items are completed.

- Review product specifications and connection details.....
See the device’s Quick Reference Guide on the [Savant Customer Community](#).
- Install the Savant IP Audio devices
See [Installation](#)
- Install Savant qualified AVB/TSN Network Switch (Optional)
See [Adding an AVB/TSN Switch](#)
- Add the Savant IP Audio devices into a RacePoint Blueprint® configuration.....
See [Adding a Savant Music Server to a Configuration](#)

3. Wiring and Connections

3.1. Audio Connection

The Savant IP Audio Music Server has two audio output connections. This device provides one stream of Savant Music, both connections transmit the same audio.



HELPFUL INFO:

The digital outputs on this product are fixed. If the connected device does not support 96kHz/24-bit digital audio, an external audio processor will be required.

3.2. Network Connection

The Savant IP Audio Music Server uses a standard RJ-45 port complying with IEEE 802.3 Ethernet standards. This port also supports Audio Video Bridging (AVB) or Time Sensitive Networking (TSN) over Ethernet (AVB/TSN, IEEE 802.1). Up to 45 IP Audio devices can be connected using AVB/TSN compliant switching. For more information on this, see the [Expansion](#) section.

3.3. AC Power Connection



SURGE PROTECTION!

Use a surge-protected circuit for all components and power supplies requiring 100/240V (AC 50/60 Hz) source power.



ELECTRICAL DISCONNECT!

The source power outlet and power supply input power sockets should be easily accessible, to disconnect power in the event of an electrical hazard or malfunction.

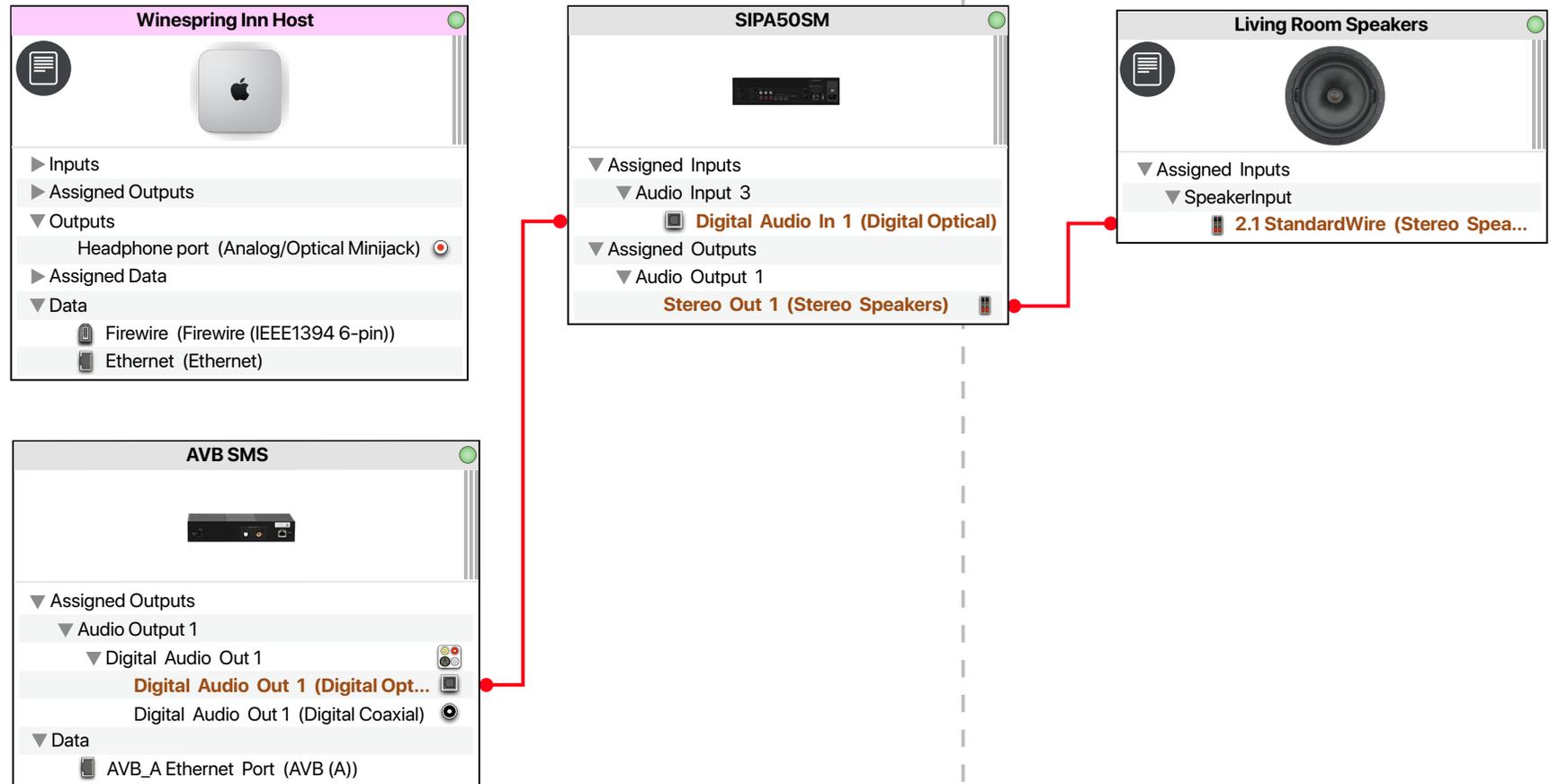
4. Installation

The Savant IP Audio Music Server (PAV-SMS2001) can be placed on any solid flat surface such as a table or shelf, or can be installed in any 1U NEMA rack shelf.

5. Blueprint Configuration

5.1. Basic Blueprint Layout

The image below shows a simplified example of a basic RacePoint Blueprint layout for the Savant IP Audio Music Server:



5.2. Adding a Savant Music Server to a Configuration

To add a Savant IP Audio Music Server to a RacePoint Blueprint configuration, follow the steps outlined below. The basic process is the same for all IP Audio devices.

Within the open Blueprint configuration for the site:

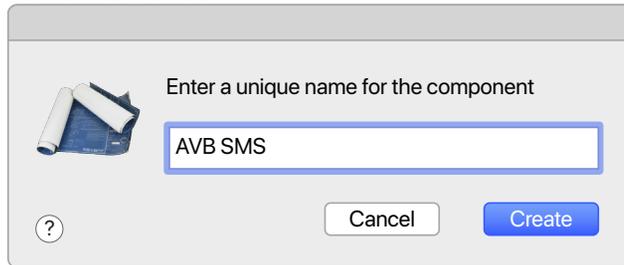
1. Click Show Library.
2. Search for PAV-SMS.
3. Select the PAV-SMS2001 and drag into a Shared Equipment zone.



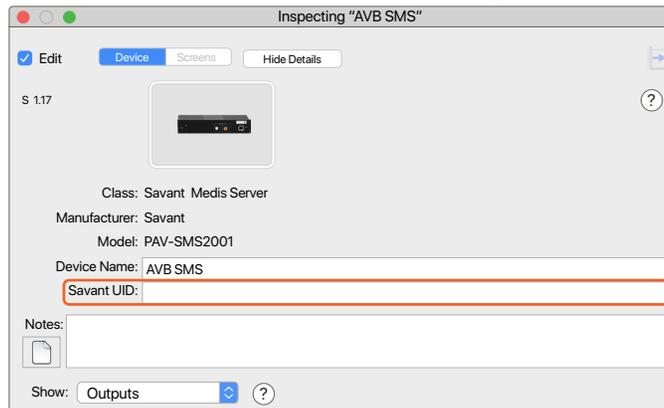
HELPFUL INFO:

Savant recommends placing all A/V source components in a Shared Equipment zone. The signal path of any source devices placed within a User zone cannot output to any other zone.

4. Name the Device.



5. Place PAV-SMS2001 in the layout window.
6. Select the PAV-SMS2001.
7. Open Inspector.
8. Enter the Savant UID in the corresponding field as shown below. The device UID can be found printed on a sticker on the physical device.



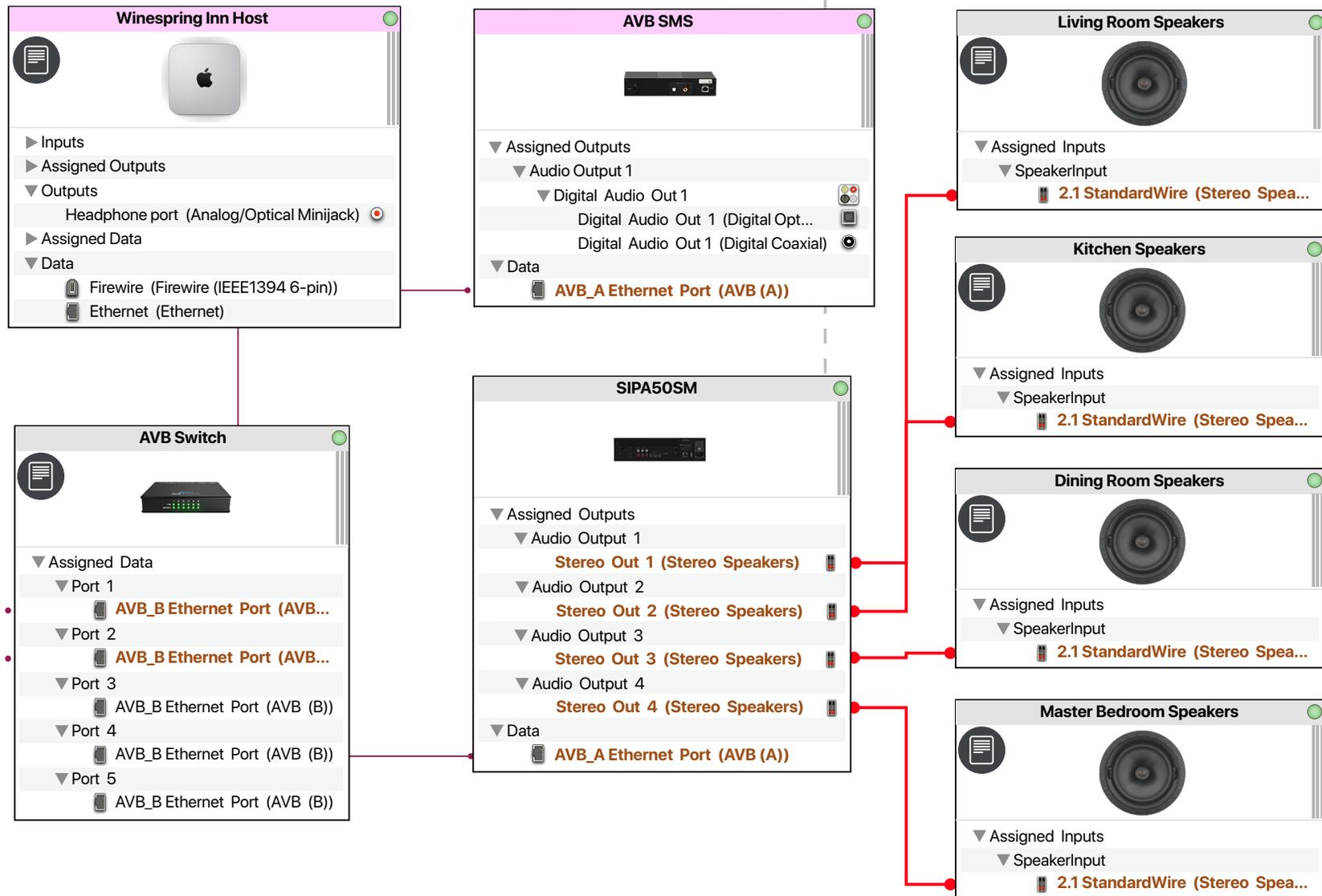
NOTE: For single unit deployments, there is no need to represent the Ethernet/data connection within Blueprint. This connection is implied, and should only be added for multi-unit deployments utilizing an AVB switch.

Savant IP Audio products support modular expansion with up to 45 devices in a single system. Each device must be added to the system in the same way shown here for the first. See the [Expansion](#) section of this document for further information.

6. Expansion

Up to 45 Savant IP Audio devices can be connected using any compatible AVB/TSN certified switch. The example below shows a simplified Blueprint layout using multiple IP Audio devices connected via AVB switch.

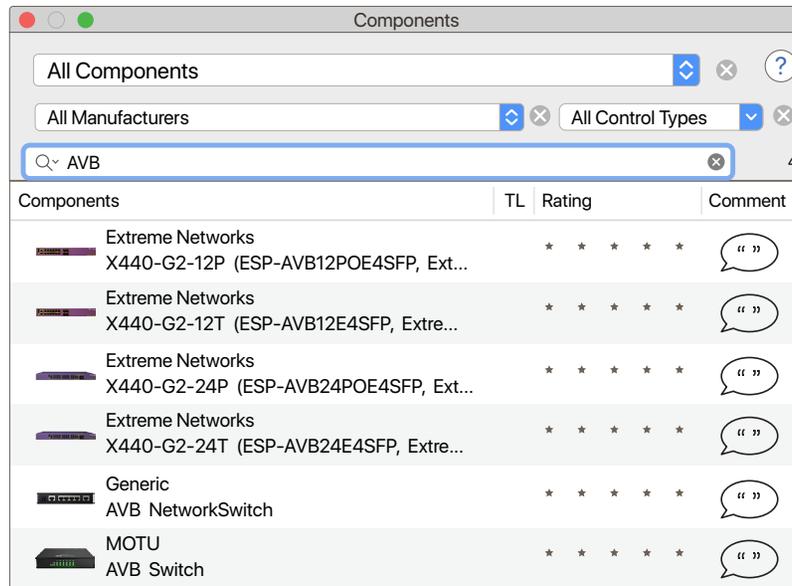
6.1. AVB Blueprint Layout



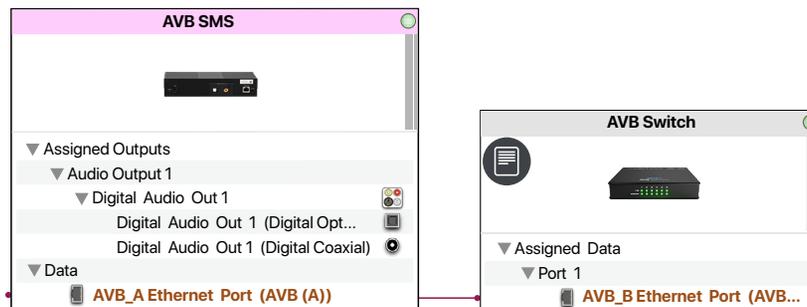
6.2. Adding an AVB/TSN Switch

An AVB/TSN switch is only needed if more than one IP Audio device is being used.

1. From Blueprint Click Show Library
2. Search for AVB.



3. Drag into a Shared Equipment zone.
4. Name the Device.
5. Place the AVB switch in the layout window and make AVB connections.



All Savant IP Audio devices in a multi-source AVB deployment of this type must be connected to the AVB switch via their Data/Ethernet ports as shown above.

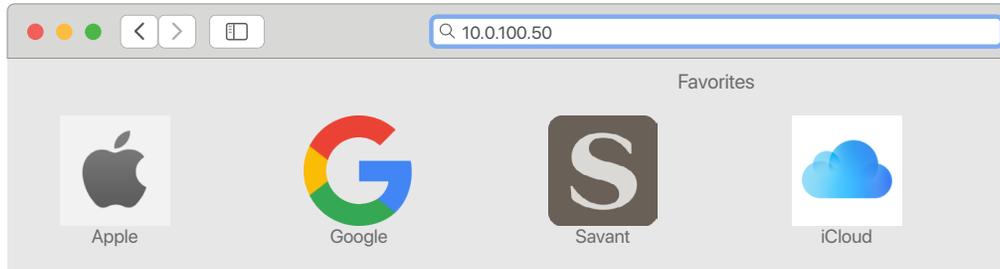
7. Web User Interface (Web UI)

Savant IP Audio devices have an available Web UI, which includes options for control and real-time management of audio connections, as well as a number of device settings. This can be especially useful for troubleshooting potential issues in the field.

7.1. Accessing the Web UI

In order to access the Web UI, the IP Address of the IP Audio device is needed. This can be obtained from System Monitor, rpmEmbScanner, or any network scanning software.

1. On the SDE, open a Web Browser and enter the address of the device in the address bar:
Syntax: `http://[IP Address of Device]`



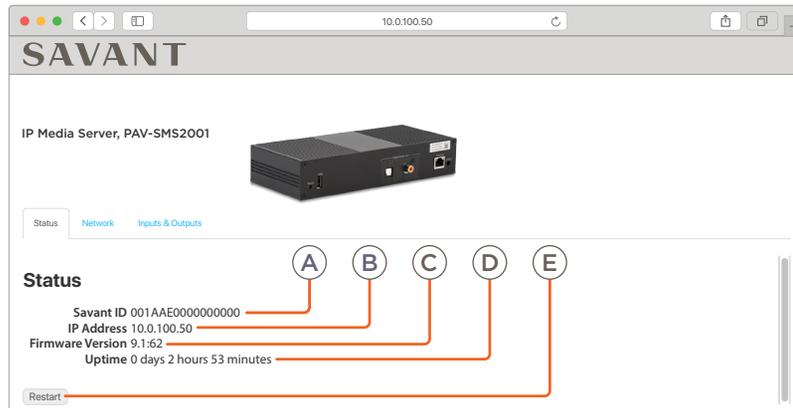
2. Once opened, login credentials will be required:
Default User Name: RPM
Default Password: RPM

Log in to 10.0.100.50:80
Your password will be sent unencrypted.

Remember this password

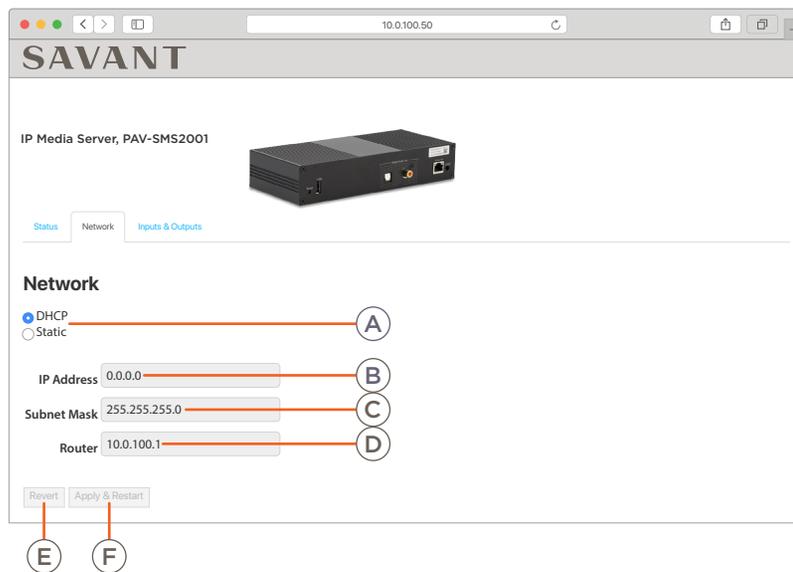
[Cancel](#) [Log In](#)

7.2. Status Tab



(A) Savant ID	UID of the device.
(B) IP Address	Currently assigned IP Address.
(C) Firmware Version	Current Firmware Version number.
(D) Uptime	Amount of time the unit has been powered without a restart.
(E) Restart	Restarts the software of the unit.

7.3. Network Tab



(A) IP Address Configuration	DHCP (Dynamic Host Configuration Protocol) or Static.
(B) IP Address	Displays the current IP Address and allows for entry. This is automatically assigned when item A is set to DHCP.
(C) Subnet Mask	Subnet mask of the network. This is automatically assigned when item A is set to DHCP.
(D) Router	IP Address of the network router. This is also known as Gateway or Default Gateway.
(E) Revert	Select to erase entered settings and revert back to saved settings.
(F) Apply & Restart	Select to apply entered settings, and restart the device.

NOTE: Setting the IP Address with a Static Address from the WebUI will automatically set the device's DNS to 8.8.8.8 and 8.8.4.4 (Google).

7.4. Inputs & Outputs Tab



A Connector Type	Analog Inputs: Stereo RCA, Digital Inputs (TosLink), Media Server.
B Channel Trim	Fixed input. The built-in music stream is a digital source and does not have a variable trim.
C Input List	List of the inputs on the device.
D I/O Connection Indicator	When an input is connected to an output, a line will appear between them representing the connection. Inputs without an active connection display a black dot with no line. To connect an input to any output, click and hold the black dot for the input, then drag to the dot for the output and release.

E Output List	List of the outputs on the device.
F Output Channels	Stereo Digital outputs are set to Stereo and cannot be changed.
G Pass-Through	Pass-Through Digital outputs are set to Pass-Through and cannot be changed.
H Delay	Adjustable delay per channel from 0 - 160ms.
I Volume	Fixed Output

8. Savant Music

The PAV-SMS2001 has a single stream of Savant Music. This allows the use of popular music streaming services such as Pandora or Spotify (streaming music service fees may apply). For a full list of supported streaming services, see Savant Media Server/Savant Music Supported Streaming Services on the Savant Customer Community.

The service is generated in Blueprint. The streaming services are managed in the Savant Pro App.



HELPFUL INFO:

The Host must be connected to the Savant Cloud with a valid Host Binding in order to add streaming services to the system via the Savant Pro App.

9. System Monitor

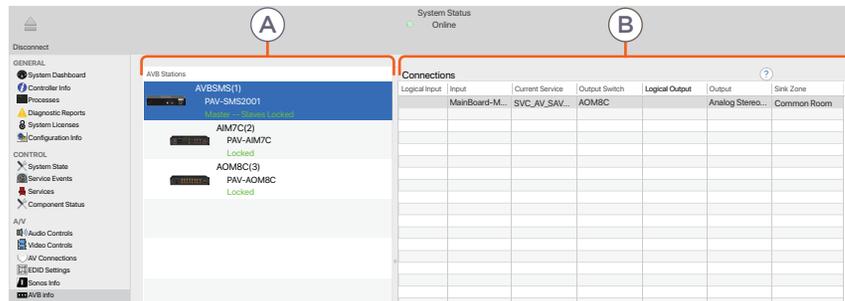
Active AVB connections can be monitored from System Monitor. Select the AVB Info tab from the left side menu list to view active connections and devices.

9.1. AVB Info

Connections outputting from their source device without transmitting over an AVB connection will not display under the AVB Info tab.

Examples:

- Audio from device A that is output from device B will be displayed, as the signal is being passed over an AVB connection between devices.
- Audio from device A outputting from device A will not be displayed, as the signal is not being sent over an AVB connection between devices.



A AVB Stations

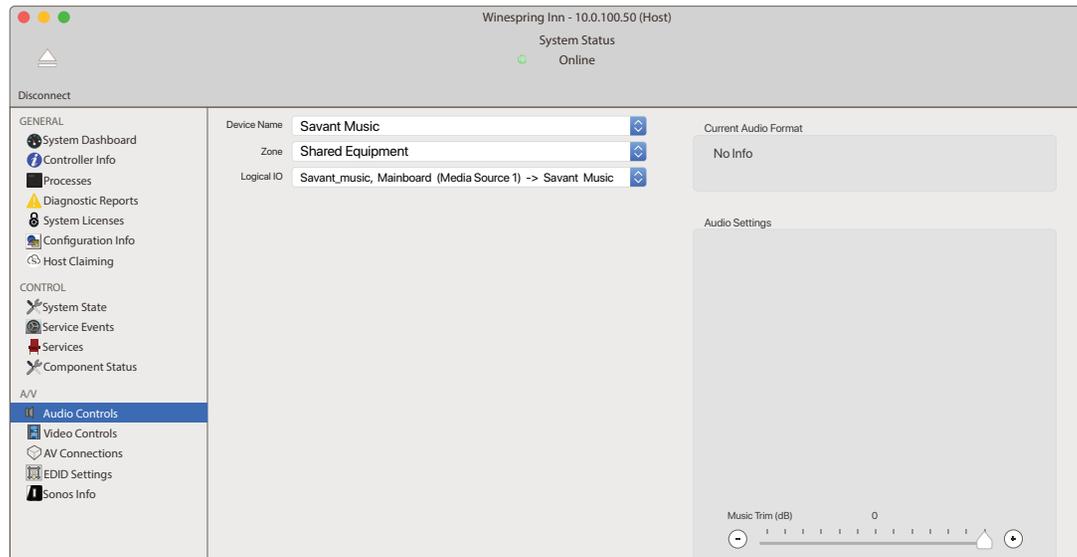
All AVB/TSN compliant Savant products will display. AVB/TSN Master/Slave notations display here. If “Freewheeling” displays AVB connections will not work.

B Connections

All active AVB/TSN connections that originate on the selected device.

9.2. Savant Music Trim

Input trim of the Savant Music 2.0 service can be adjusted from within System Monitor. The trim adjustment is from 0 dB to -12 dB. Below is an image of the Music Service System Monitor screen.



Appendix A: Network Requirements

Savant requires the use of business class/commercial grade network equipment throughout the network to ensure the reliability of communication between devices. These higher quality components also allow for more accurate troubleshooting when needed.

Device Network Connections

Connect all Savant devices to the same local area network (LAN) or subnet as the Host. Savant recommends not implementing any type of traffic management, packet shaping, band steering, QoS or similar features within the network topology for Savant devices, as this may interfere with performance.

AVB Requirements

Savant requires the use of an AVB/TSN compliant switch meeting IEEE standard 802.1BA+2011 for all IP Audio components utilizing AVB communication.

Managing IP Addresses

To ensure that the IP Address will not change due to a power outage, a static IP Address or DHCP reservation should be configured. Savant recommends using DHCP reservation within the router. By using this method, IP Addresses for all devices can be managed from a single UI, avoiding the need to access devices individually.

Setting a Static IP Address

Setting a Static IP Address can be done in the Web UI via the Network tab.

Setting DHCP Reservation

The process for setting DHCP reservation varies from router to router. Refer to the documentation for the router to configure DHCP reservation.

Network Changes

Savant recommends performing one of the following steps to refresh the IP connection. After connecting to a new network, changing routers, or altering the IP address range for the current router:

Cycle Power

- Disconnect the IP Audio device from the power source.
- Wait 15 seconds and then reconnect.

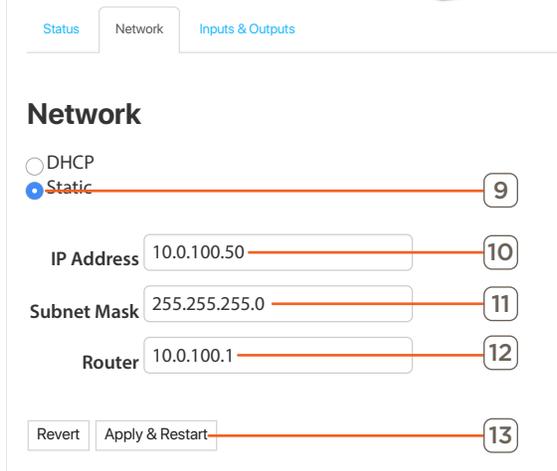
Hot Plug the Ethernet (LAN) Connection

- Disconnect the Ethernet (LAN) connection from the device.
- Wait 15 seconds and then reconnect.

Appendix B: Setting Static IP Address

To assign a static IP address for a Savant IP Audio device, follow the steps outlined below:

1. Open System Monitor.
2. Double click the Host.
3. Select Controller Info.
4. Select the PAV-SMS2001.
5. Copy the IP address.
6. Open a web browser and enter the IP Address in the address bar.
7. Enter the username and password. Default username: RPM, default password: RPM.
8. Select the Networking tab.
9. Select Static



The screenshot shows the 'Network' configuration page. At the top, there are three tabs: 'Status', 'Network', and 'Inputs & Outputs'. The 'Network' tab is active. Below the tabs, the title 'Network' is displayed. There are two radio buttons: 'DHCP' (unselected) and 'Static' (selected). Below the radio buttons, there are three input fields: 'IP Address' with the value '10.0.100.50', 'Subnet Mask' with the value '255.255.255.0', and 'Router' with the value '10.0.100.1'. At the bottom, there are two buttons: 'Revert' and 'Apply & Restart'. Red lines with circled numbers 9 through 13 point to the 'Static' radio button, the 'IP Address' field, the 'Subnet Mask' field, the 'Router' field, and the 'Apply & Restart' button, respectively.

10. Enter desired IP Address
NOTE: To avoid potential IP addressing conflicts, the IP address entered must be outside the DHCP range, or should be reserved for the device's UID within the router.
11. Enter the Subnet Mask, change only if needed.
12. Enter the IP address of the router, change only if needed.
13. Click Apply & Restart.

Appendix C: DNS (Add, Remove, Query)

Manually setting DNS at the component level is generally not required, and is only sometimes relevant for devices utilizing a built-in Savant Music stream. Follow the steps shown below to add, remove, or query the configured DNS server(s) for IP Audio devices.

1. Open a terminal window on a MacBook/SDE.
2. Enter `ssh RPM@<IP Address of IP Audio device>`

Example:

```
ssh RPM@10.0.100.45
```

3. When prompted enter the password.
Default: RPM

4. Once logged in, the commands below will add, remove, or query the DNS server(s) configured:

```
To add a DNS server:          setDNSServer -add -address x.x.x.x <enter>
```

```
To remove a DNS server:     setDNSServer -remove -address x.x.x.x <enter>
```

```
setDNSServer <enter>
```

To query the DNS servers configured:

Terminal window will respond with the list of DNS servers as displayed below:

```
nameserver 8.8.8.8
```

```
nameserver 8.8.4.4
```

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