



WAVES

# MultiRack

## SETUP GUIDE

V9.80





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## 1. Overview

There are two versions of the MultiRack software: Native and SoundGrid.

**Native** utilizes the computer's CPU to power the plugin processing. In practice, this means that plugin count and overall system latency depend on the computer's CPU and sound driver capabilities.

**SoundGrid** uses a dedicated SoundGrid DSP server to power the plugin processing, providing low latency, high plugin counts, a backup DSP server, and networking capabilities.

## 2. Basic Requirements

- **PC or Mac Host Computer** – The main brain and controller for the system that runs the MultiRack live plugin host application.  
Refer to <http://www.waves.com/support/tech-specs/system-requirements> when choosing your computer.
- **USB flash drive (optional):** The USB flash drive key holds the licenses for Waves V9 plugins and provides activated licenses on the go. Alternatively, you can authorize your host computer's hard drive through the Waves License center (when using Multirack Native).  
The USB flash drive must be connected to the console at all times when using Multirack SoundGrid. Check USB flash drive compatibility: <http://www.waves.com/support/usb-flash-drive-formats>.
- **Optional MIDI Controller** – A MIDI controller can be used to remote control MultiRack SoundGrid in real time without using a mouse or keyboard.



### 3. Software

- **MultiRack Native** – Host software for Waves Native plugins; supports MultiRack Native-compatible plugins only.
- **MultiRack SoundGrid** – Host software for SoundGrid-compatible plugins; supports MultiRack SoundGrid-compatible plugins only.
- **MultiRack SoundGrid for DiGiCo offline software** – For preparation of offline MultiRack sessions for SD consoles using DiGiCo's SD offline editor.
- **SoundGrid Studio** – Required for recording and/or playback only (installation optional). Can be installed on a separate computer dedicated to playback/recording.

SoundGrid Studio includes:

- The SoundGrid Studio Application for routing and setting up SoundGrid Studio
- Waves SoundGrid ASIO/Core Audio driver for Windows and Mac.
- I/O Firmware and Control Panel for the Yamaha WSG-Y16 card.
  - SoundGrid Studio with I/O firmware and Control Panel for the Allen & Heath M-Waves card is available on the Allen & Heath M-Waves download page as a standalone installer (<http://www.waves.com/downloads/allen-heath>).
  - SoundGrid Studio with I/O firmware and Control Panel for DiGiGrid MGB/MGO is available on the DiGiGrid MGB/MGO download page as a standalone installer (<http://www.waves.com/downloads/digigrid-mgb-mgo>).
- **Waves plugins** – The audio processors hosted by MultiRack.

### 4. Required Waves Licenses

Licenses can be activated on a USB flash drive or on the host computer's hard drive.

- **Native** systems require the MultiRack Native application and Waves Native plugins.
- **SoundGrid** systems require the MultiRack SoundGrid application and SoundGrid-compatible plugins.

For installation and activation instructions, read the next section of this document, or visit <http://www.waves.com/support/activate>.

### 5. Installing MultiRack



Follow the instructions below to download and install MultiRack Native and/or SoundGrid.

1. Download and install **Waves Central** for [Mac](#) | [Windows](#).  
If you already have Waves Central installed, skip to step 2.
2. Launch Waves Central.  
**Windows:** via the desktop shortcut or Start Menu > All Programs > Waves.  
**Mac:** Applications > Waves Central.
3. Log into Waves Central using your Waves account information.
4. Click on **Easy Install & Activate**.
5. Any products that are not currently activated will appear on the list.  
Check **MultiRack SoundGrid** and/or **MultiRack Native**.  
To install any plugins or bundles, check them as well.
6. Click on the **Install & Activate** button.

You will be prompted once the process is complete.

The products you have selected are now installed and activated on your computer.

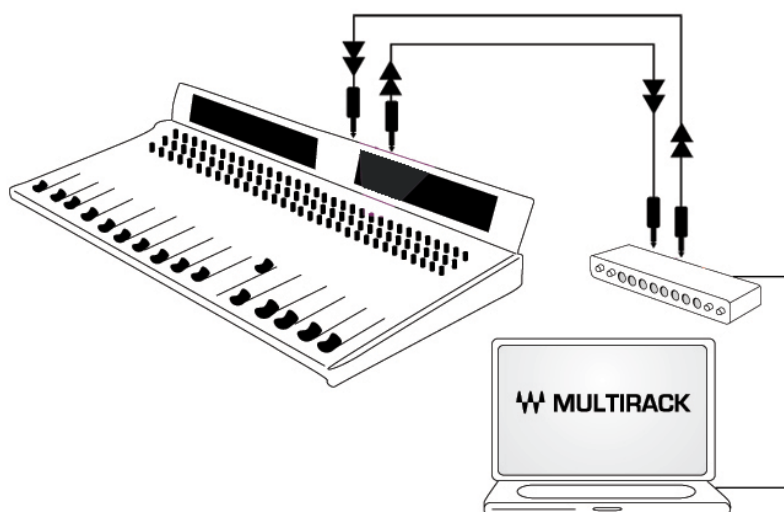
[Learn how to move your product licenses](#) to a USB flash drive or between computers.

## 6. MultiRack Native

### Hardware Connections

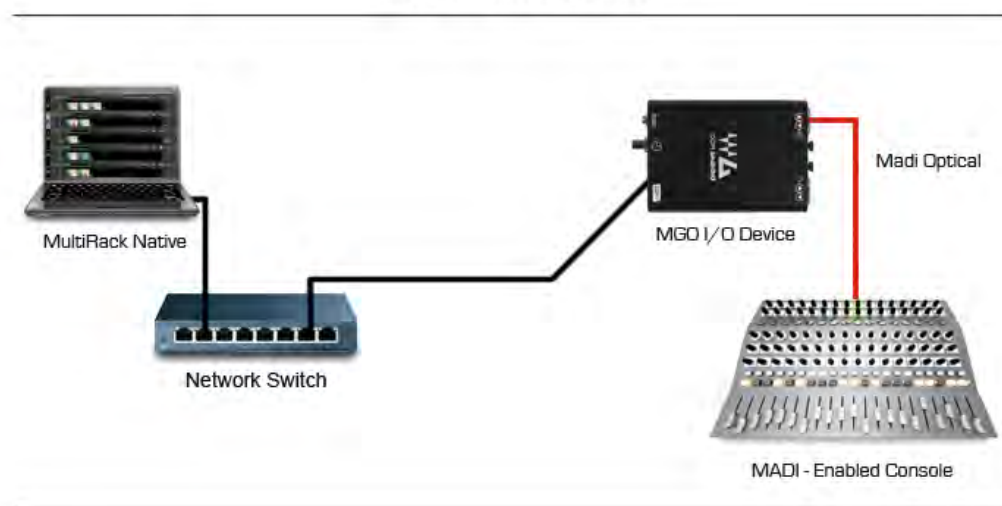
Connect an ASIO / Core Audio interface to your host computer. Use MADI, AES/EBU, or analog cables, depending on your console and audio interface. See examples below.

### Analog Connections



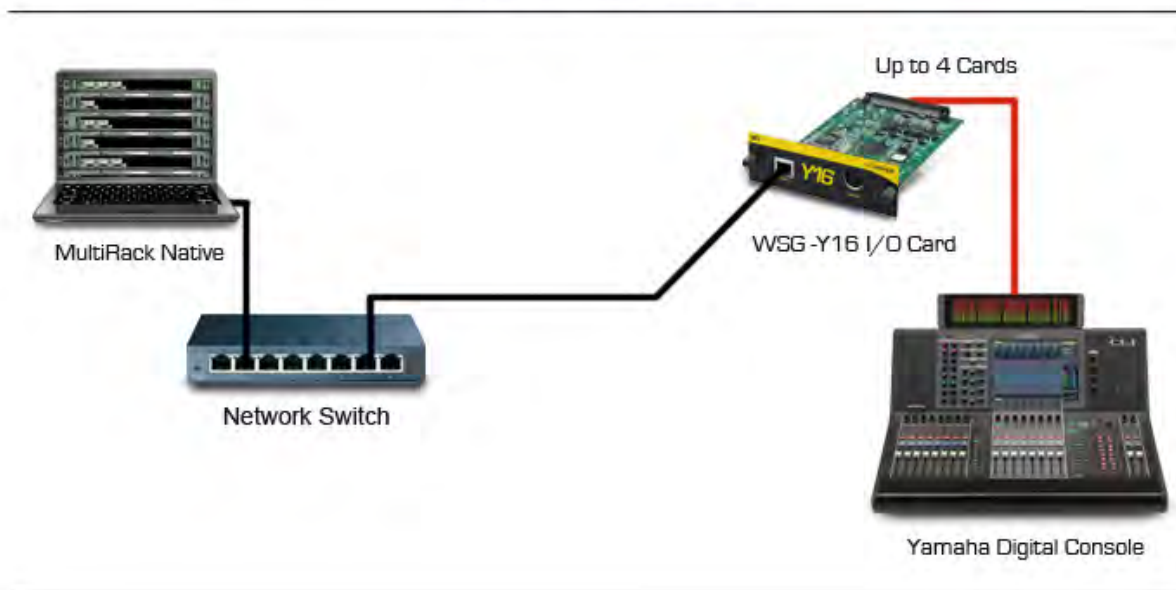
### MADI Native Connections

#### NATIVE PROCESSING



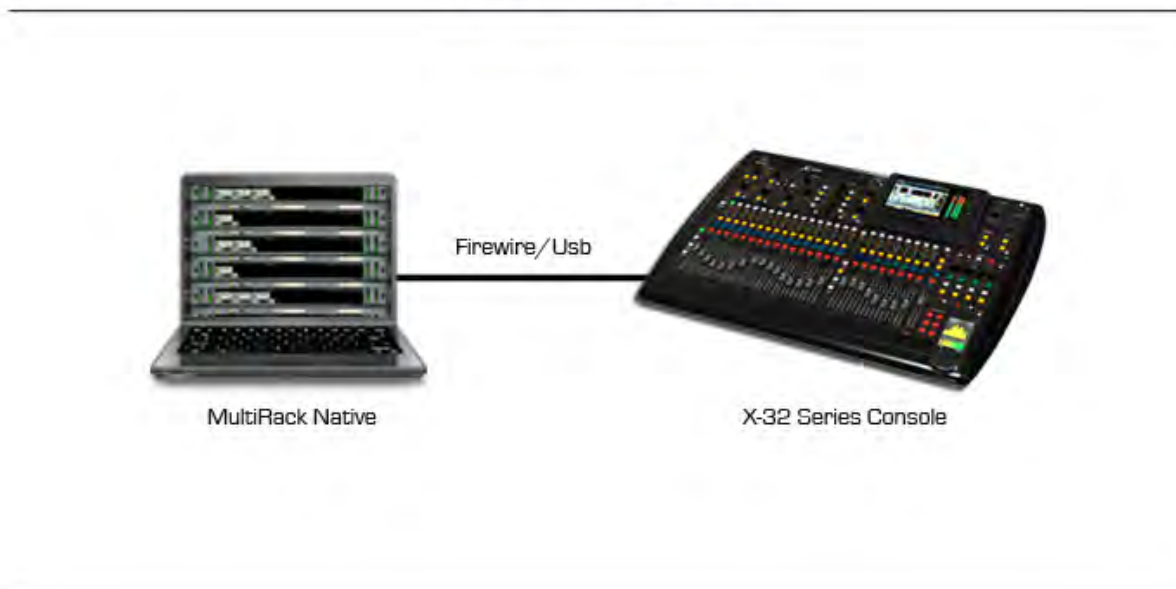
## Yamaha Native Connections

### NATIVE PROCESSING



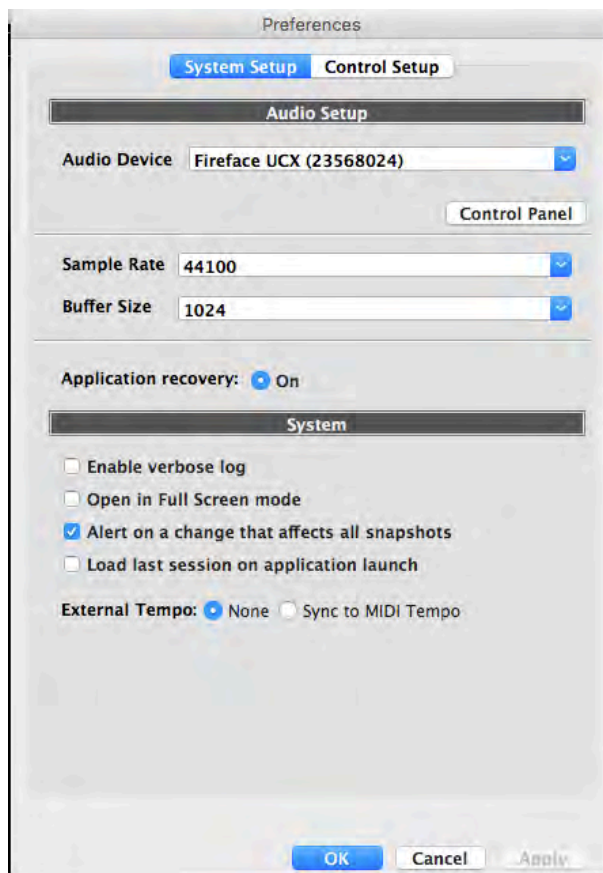
## Behringer Native Connections

### NATIVE PROCESSING



## Software Setup

Open the Preferences window “Ctrl+P” (PC) or “Cmd + ,” (Mac).. Select the audio I/O device by clicking the Audio Device dropdown menu and choosing from the available devices. (MultiRack Native supports Windows ASIO and Mac Core Audio sound cards.)



Use the Sample Rate drop-down menu to set the sample rate for the plugin and the audio device.

The Control Panel button opens the device’s control panel.





## 7. MultiRack SoundGrid Hardware Connections

### SoundGrid Requirements

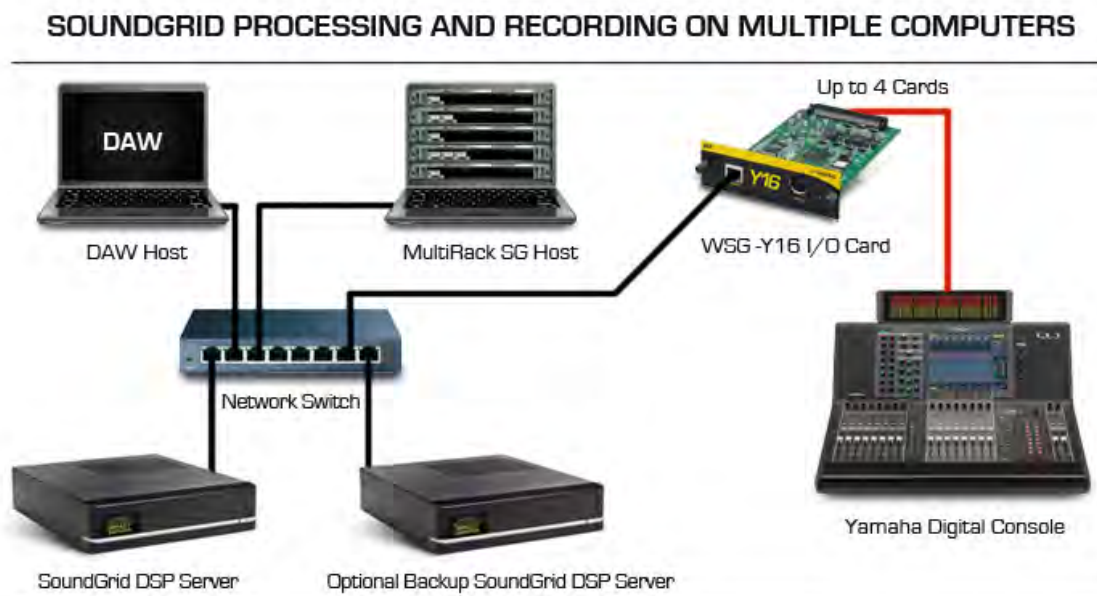
- **The SoundGrid I/O card** pipes audio in and out of the console. Please refer to the manual of your card for specific instructions regarding setup.
- **The SoundGrid DSP server** acts as the “number cruncher” for all plugins used in the application. It is possible to connect a second “redundant” server working as a backup. Check <http://www.waves.com/live-sound/soundgrid-servers> for an updated list of qualified servers.
- **The network switch** connects devices to the network. Check <http://www.waves.com/live-sound/soundgrid-switches> for an updated list of certified switches.
- **An optional secondary computer** may be used for connecting a DAW (Digital Audio Workstation) to your network for simultaneous recording and/or playback.
- **Cat 5e or Cat 6 Ethernet Cables** –  
Check <http://www.waves.com/1lib/pdf/live/soundgrid-cables.pdf> for an updated list of qualified cables.

## 8. Yamaha Hardware Connections

Begin by connecting your console and all other components to the network switch in order to create the SoundGrid network. Your MultiRack SoundGrid and DAW can be installed on the same computer or on separate computers.

- You may connect two SoundGrid DSP servers, in which case the second server will function as a redundant server.
- All components must be connected to the network switch using Cat 5e/Cat 6 cables.

For more specific installation instructions, please refer to the audio I/O or server hardware manual.

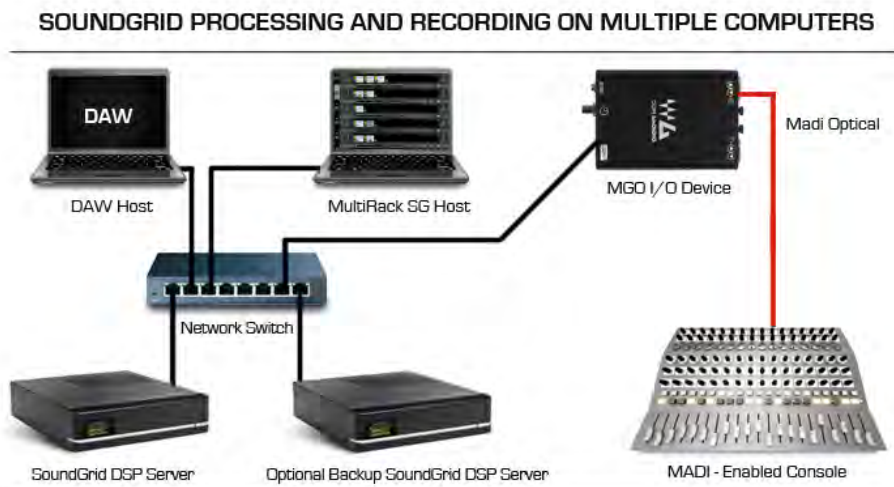
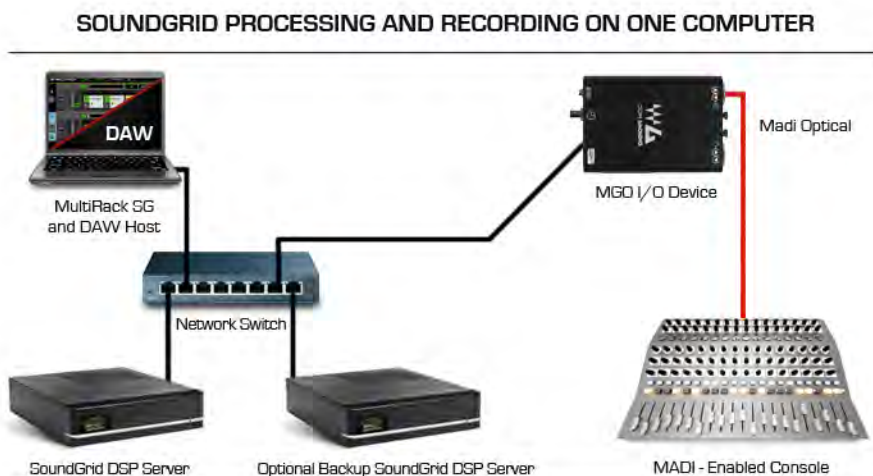


## 9. MADI-Enabled Console Hardware Connections

Begin by connecting your console and all other components to the network switch in order to create the SoundGrid network. Your MultiRack SoundGrid and DAW can be installed on the same computer or on separate computers.

- You may connect two SoundGrid DSP servers, in which case the second server will function as a Redundant Server.
- All Components must be connected to the network switch using Cat 5e/Cat 6 cables.

For more specific installation instructions, refer to the audio I/O or server hardware manual.



## 10. Allen & Heath Hardware Connections

See [detailed instructions here](#).

### SOUNDGRID PROCESSING AND RECORDING ON ONE COMPUTER



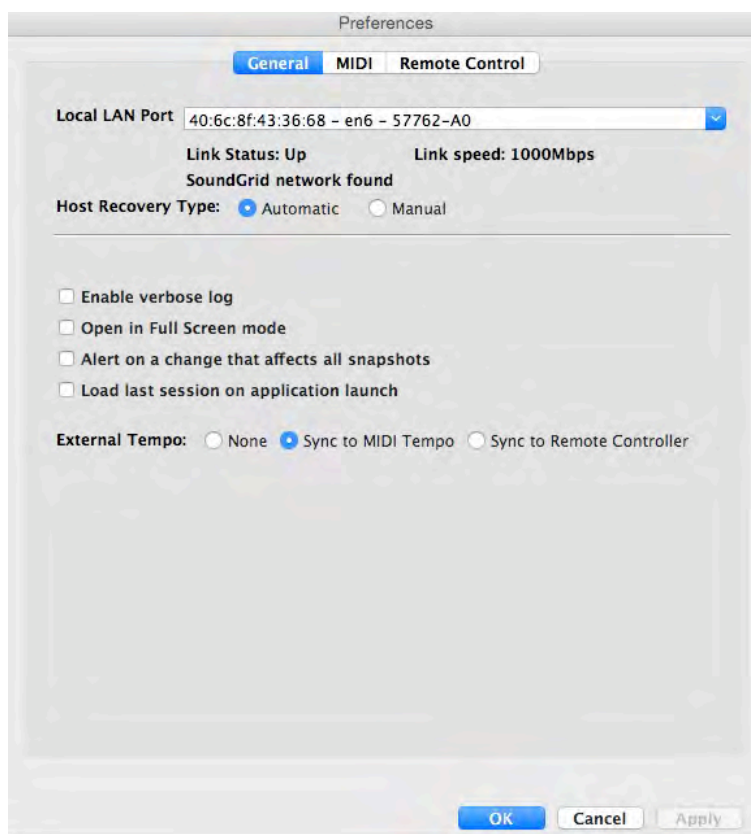
### SOUNDGRID PROCESSING AND RECORDING ON MULTIPLE COMPUTERS



## 11. MultiRack SoundGrid Software Setup

### Preferences Window

Enter the Preferences window from the Edit menu (PC) or the MultiRack SoundGrid menu (OSX), or by typing “Ctrl+P” (PC) or “Cmd + ,” (Mac).



**Local LAN Port** lists the available network adapters on the host machine. Choose the network adapter that is connected to the SoundGrid network. Network adapters are displayed by their MAC addresses and port name. When you select the proper port, a **SoundGrid network found** message will be displayed.

**Host Recovery Type:** If MultiRack SoundGrid crashes, audio streaming and processing will continue without interruption, but user control will be lost; MultiRack SoundGrid will relaunch itself automatically. When MultiRack SoundGrid relaunches, it synchronizes to the server. At the moment of synchronization there is a short mute (<1 second, depending on session size). The recovery type allows control over the precise time this muting occurs:



- **Automatic** – When recovery type is set to Automatic, MultiRack SoundGrid will load the session to the server as quickly as possible.
- **Manual** – When recovery type is set to Manual, MultiRack SoundGrid will relaunch itself but will not load the session to the server until you press the Connect button on the dialog box that appears.

**Enable Verbose Log:** When this option is selected, MultiRack SoundGrid goes into a “debug” mode and creates a so-called “verbose data file.” This information is used to help Waves technical support to assess problems. When **Enable Verbose Log** is selected, the message area of the Status Bar displays the flashing message, **Verbose Output**. The output file is titled Debug MultiRack\_date<dd.mm.yyyy>.txt.

**Open in Full Screen Mode:** Select this to load MultiRack SoundGrid in Full Screen mode.

**Alert on a change that affects all snapshots:** When this option is selected, a warning will appear each time you attempt to modify any rack configuration. This is helpful when you are learning the application, but may prove annoying for more seasoned users.

**Load last session on application launch:** Select this option to load the last opened session on your next application launch.

**External Tempo:** Use to set MultiRack’s Global Tempo to chase an external sync source.

- **None** – When external tempo is set to None, MultiRack is not synced to an external tempo. Instead it establishes its own BPM as set in the application top bar.
- **Sync to MIDI Tempo** – When external tempo is set to MIDI, MultiRack syncs to incoming MIDI Beat Clock messages.
- **Sync to Remote Controller** - When external tempo is set to Remote Controller, MultiRack will conform to the tempo setting provided by the Remote Controller that is assigned in the Remote Control Tab.



## Remote Control Tab

The Remote Control tab sets the connection between MultiRack and a console. This enables an integrated workflow in which the console controls MultiRack remotely. Here you see the consoles that the network has discovered. You can then set up a connection with one of them. Once connected, MultiRack will load the appropriate configuration file that activates the integrated workflow with that console.

To establish remote control over IP, IPv4 on the LAN port you're using should be configured as follows:

- **Mac:** System Preferences -> Network. Select "Using DHCP."
- **PC:** Network Connections -> Ethernet Properties -> Internet Protocol Version 4 (TCP/IPv4). If DHCP is used, select "Obtain an IP address automatically," or set static IP if you know the console's IP address.

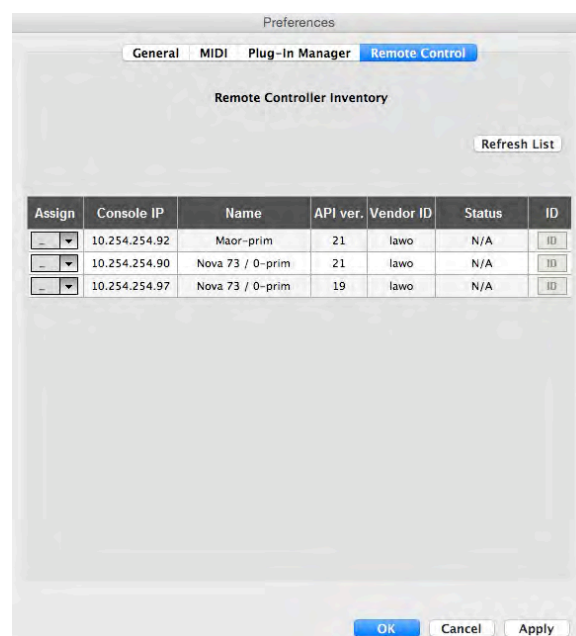
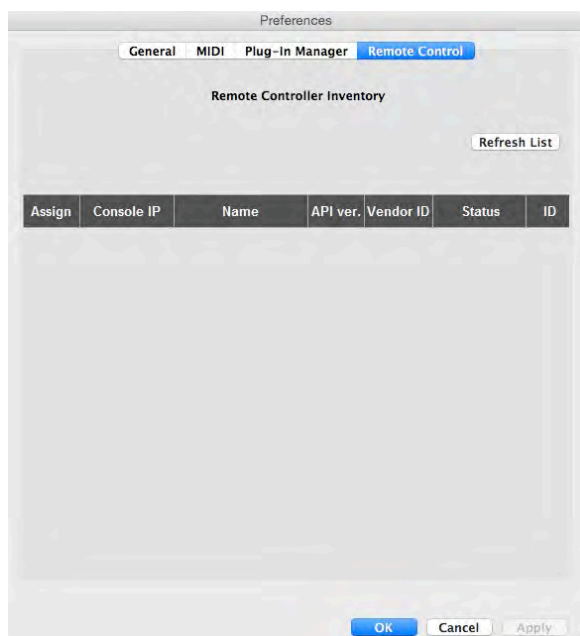
The process of discovering and assigning a console as a remote controller is similar to assigning devices in the SoundGrid Inventory page.

First, select the LAN port that the remote console is networked to.

- If this is the same network that SoundGrid is using, select the same port you have chosen in the General Tab.
- If the console is on another network, make sure the computer is connected to that network and that the appropriate LAN port is selected.

All consoles that are on this network are listed in the Remote Controller Inventory. If your console is not listed, or if you have changed devices, click the "Refresh List" button. If no consoles are found, the inventory remains empty.



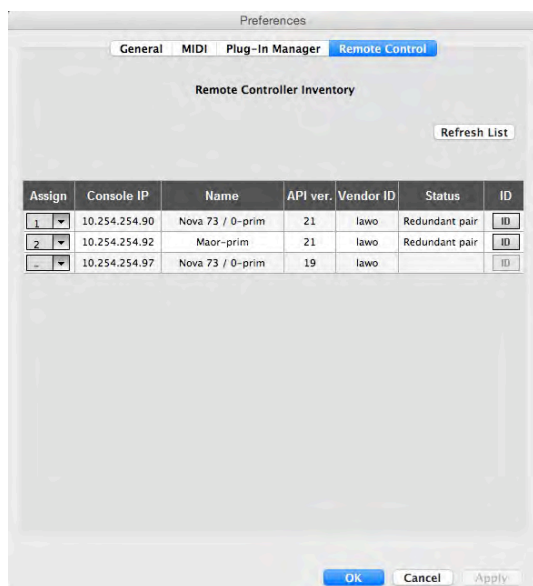


To assign a console, select it in the list and set its assignment number to “1”. Click “Apply.” You will be asked to restart MultiRack for the changes to take place. If you do not restart MultiRack, the changes you’ve made will not be applied, and console status will remain “N/A”. After restarting MultiRack, you will notice that some of the menus and functions are no longer seen in the user interface. These functions are now slaved directly to the controlling console. MultiRack now functions as an extension of your console.

An assigned console will remain listed even if it crashes, disconnects, or has been completely removed, and MultiRack will persist in trying to re-connect to it. To remove it from the list, unassign it.

Assigning two consoles, assignments “1” and “2,” creates a redundant pair. MultiRack will listen for remote control commands coming from both consoles. If one of the consoles is disconnected or fails for any reason, MultiRack will continue receiving control commands from the second console. The two consoles must be of the same Vendor ID and have the same version (of the API) installed.

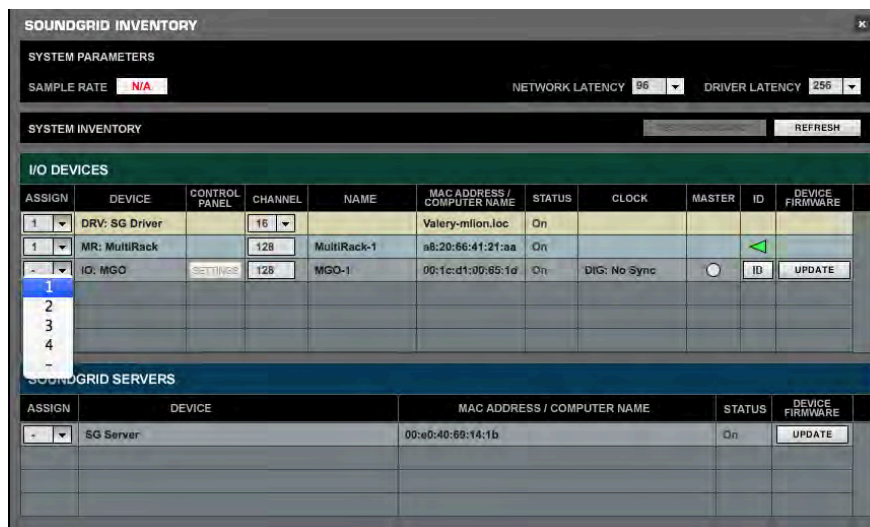




## Remote Controller Inventory Controls and Indicators

- **Assign:** Selects devices that will be used in your setup. The number you assign to a device is its index number in the Inventory list. In the case of a console, setting “1” means it is the only console controlling MultiRack. Setting “1” and “2” means that one console is a redundant controller.
- **Console IP:** Displays the IP address of each console.
- **Name:** Displays the console’s name as set on its interface.
- **API ver:** Displays the version number of the remote control protocol.
- **Vendor ID:** Displays the version ID of the remote controlling console.
- **Status:** Displays the connection status.
  - N/A: Indicates that the console is not assigned or that MultiRack has not been restarted to apply changes after assigning a console.
  - Connected: Console is connected to MultiRack.
  - Not Connected: Console is assigned but is not connected to MultiRack.
  - Redundant pair: Console is paired with another console for control redundancy.
- **ID:** If this feature has been implemented on the console side, clicking this button will ping the console and cause it to display something on its screen, allowing you to identify it.

## 12. SoundGrid Inventory:

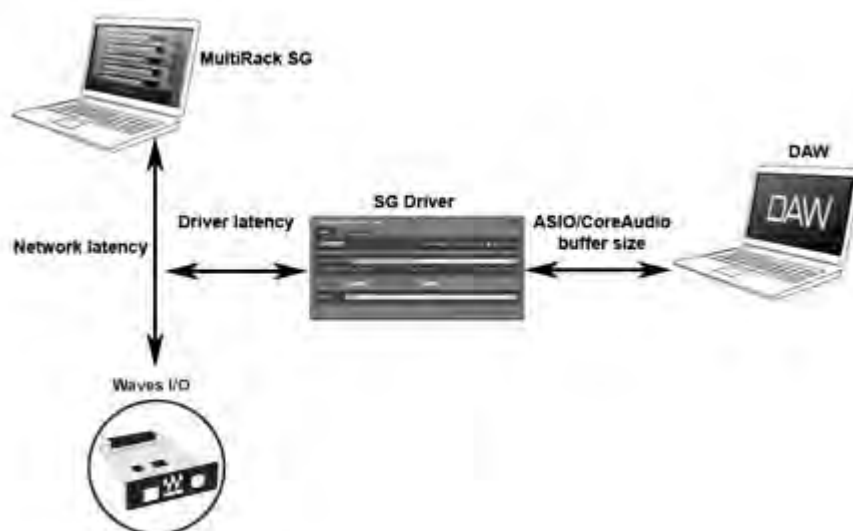


This window is accessed by selecting SoundGrid Inventory in the Edit menu.

Changes in the Inventory window are allowed only in Setup mode. In Show mode, the window opens as display-only and no changes are allowed. Changes made in the Inventory window are applied immediately.

### System Parameters

- **Sample Rate** displays the sample rate. MultiRack SoundGrid is slaved to the console or I/O sample rate; this field cannot be edited.
- **Network Latency** sets the network latency value. This field allows you to change SoundGrid network throughput latency. This value sets the buffering delay used by the processing engine(s) and affects SoundGrid's end-to-end latency. Plugins that add latency will add to the overall latency (system latency + plugin latency) of the specific rack into which these plugins are inserted. See <http://www.waves.com/live-sound/soundgrid-servers> for correct settings.



The above diagram illustrates the various latencies in the SoundGrid system. Network latency occurs between the I/O device and the processing engine; driver latency is added between the network and the host computer on which the driver is installed. ASIO or Core Audio buffering is usually added between the driver and the DAW software.

- **Driver Latency** determines the SoundGrid's driver's input latency, i.e., the latency between the driver's host computer and the network. This value sets the added latency required for recording and playback. A setting of 256 samples will work well on most computers.
- **Test Redundancy:** In a setup using a redundant server, a second server is connected to the main audio processing DSP server. When the main server fails, the secondary backup server automatically takes over and begins processing. Click the **Test Redundancy** button to make sure the redundant server is capable of holding the session being handled by the main server. This is important when the two servers are not identical.
- **Refresh** is used to refresh the inventory list after you have changed devices or settings. The **Inventory** table displays all SoundGrid devices available on the network, allowing you to select/assign the devices you are using.
- **Assign** selects devices for usage in your setup. The number you assign to the device is its index number in the Inventory list. For an I/O device, setting "1" means this is the first I/O device and its channels will be the first listed in the routing menus.



- **Device** displays the type and description of the device. When you hover with a mouse over a device row, the device's software/firmware version is displayed as a tool-tip.

## I/O Devices

- **I/O:** An I/O device that streams audio to and from the SoundGrid network.
- **DRV:** A SoundGrid driver installed either on another computer connected to the network, or on the same computer on which MultiRack SoundGrid is running.
- **MR:** MultiRack, SoundGrid's audio processing device. MultiRack is the device that receives audio for processing.

**Control Panel:** Contains a setting button for configurable devices, for example DiGiGrid MGO/MGB. Click the button to access the control panel of each device.

**Channel:** Displays the number of channels available on the device. I/O and MultiRack channels cannot be set and are display-only. SoundGrid Driver channels can be set by the user. For example, if you set 32, your driver will have 32 recording and playback channels.

**Name:** Double-click this field to rename the device.

**MAC address / Computer Name:** Displays the device's MAC address or computer name.

**Status:** Displays the device's status in real-time.

**Clock:** Displays I/O devices' clock status. Sync OK indicates that the device is synced internally or to another device.

**Master:** The Radio button lets you choose the I/O device as Clock Master. (Yamaha WSG-Y16 and Allen & Heath M-Waves cards are automatically set as Clock Master.)

**ID:** Applicable for I/O-type devices only. Clicking this button will temporarily turn on the selected I/O's link and activity LEDs while turning all other I/O devices' LEDs off, allowing you to identify the device in the network.



**Device Firmware:** This column holds an Update button for each I/O or server device. Click the button to update the device's firmware if incompatible with the MultiRack version you are using. The Update process will display a progress bar and status messages. Follow the status messages and instructions carefully. At the end of the process, reboot the updated devices, let them boot, then click the window's Refresh button.

## **SoundGrid Servers**

The **Servers** table is very similar to the **Inventory** table and is used in the same way. This table is separate from the I/O Device table, since servers do not have channels and do not receive audio connections.

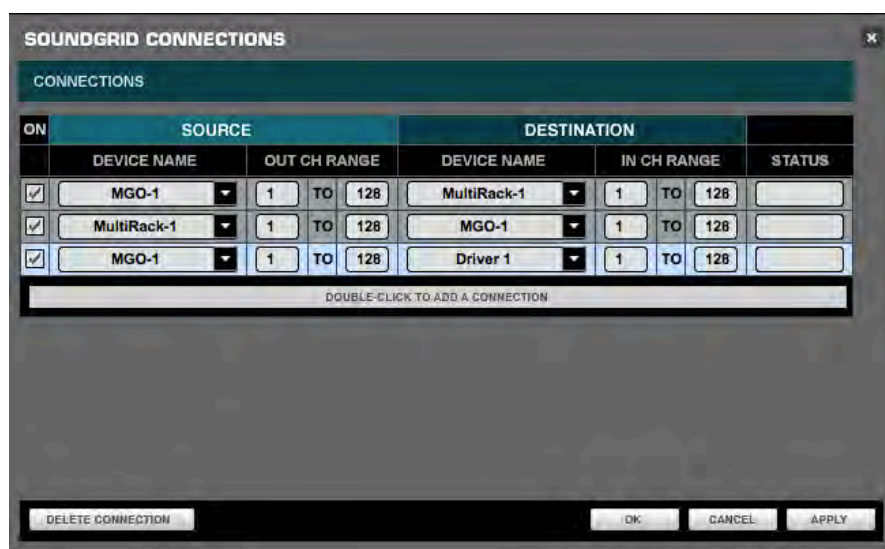
Choose "1" for the server you intend to use as your main processing engine; choose "2" for the server you intend to use as a redundant server.

### 13. SoundGrid Connections Window

The **Connections** table allows you to create audio connections (routes) between source and destination devices.

Go to **Edit** menu and select the **SoundGrid Connections** menu item, or press F3. On the left-hand side of the table, select the source device and its output channels that will be routed to the destination device's channels. Channels are set in ranges; for example, setting Source channels 1 to 8 means you are routing the device's channels 1 through 8 to send audio to a destination device

Components that are not assigned in the **Inventory** section will not appear in the list and cannot be used.



A new connection is created by double-clicking the Double-click to Add a Connection area.

The **Connections** table has the following controls:

<b>On/Off</b>	Turn the connection on and off by check-marking it. Note that if a connection becomes invalid it is automatically un-checked.
<b>Source: Device Name</b>	Use the pull-down menu to select a source device by its name (as set in the Inventory window), i.e., the device that will send audio in this audio connection.

<b>Source: Output Chn Range</b>	Use the pull-down menu to select a source device by its name (as set in the Inventory window), i.e., the device that will send audio in this audio connection.
<b>Destination: Device Name</b>	The channels of each connection are set by ranges. Use the two edit fields to set the range of channels the source device will send. Note that the values are limited by the number of channels the device supports and by your Inventory settings.
<b>Destination: Input Chn Range</b>	The channels of each connection are set by ranges. Use the left edit field to set the range of channels the destination device will receive; the right field is display-only and will change according to your setting in the left field. Note that the values are limited by the number of channels the device supports and the number of channels set in the source device (Source and Destination channel count must match).

**Please note:**

- Channel settings must start with an odd number, and the connection must have an even number of channels. For example, channel ranges can be set 1-8, 3-6, 7-14 and so on. Connections set to 4-7, 2-11 or similar are invalid.
- Channels can be set by direct value entry or by dragging the mouse up or down.
- If a device or channel(s) used in a connection become unavailable, the connection is automatically deactivated but is not removed.
- If, while setting up a connection, a conflict in connection arises, the connection will be marked as invalid in red italics and will be turned off; you will not be able to apply the window's setting. Overlapping connections are marked blue.

## 14. Setting Up the SoundGrid Driver

Please refer to the Waves SoundGrid Studio User Guide.