Cadac SoundGrid I/O

User Guide

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1. Introduction

Thank you for choosing the Cadac audio interface for SoundGrid systems. In order to get the most out of your product, please take some time to read this user guide. We also suggest that you become familiar with the Waves support site (www.wavesupport.net), where you will find an extensive answer base, the latest tech specs, detailed installation guides, software updates, and current information about licensing and registration.

1.1 About SoundGrid and the Cadac SoundGrid I/O

SoundGrid is a scalable infrastructure that provides a variety of cost-effective, high quality solutions for recording studios. It can be configured in many ways and with many hardware possibilities to provide a very flexible work environment. This framework is managed by either the **SoundGrid Studio or the MultiRack SoundGrid application**, which configures the network, assigns and manages I/Os, controllers and servers, and patches audio throughout the system. Any user, anywhere on the SoundGrid network, has access to any of the network's I/O devices. Adding a SoundGrid DSP server enables recording and monitoring with very low latency and moves processing away from the host computer to the server.

A single Ethernet cable connects all devices in the SoundGrid network.

The Cadac SoundGrid I/O (or card) for CDC consoles enables integration with Waves SoundGrid systems via a single Ethernet cable, allowing live sound engineers to use the SoundGrid networking technology for low-latency plugin processing, multitrack recording and playback, and audio networking.

- Super-low-latency networking platform for processing, playback and recording
- Each Cadac I/O allows 64 channels of bi-directional audio
- Connects via a single Cat 5e or Cat 6 Ethernet cable
- Clock Sync-over-Ethernet for digital splits
- Connects to SoundGrid systems and SoundGrid-compatible devices via a single Ethernet cable
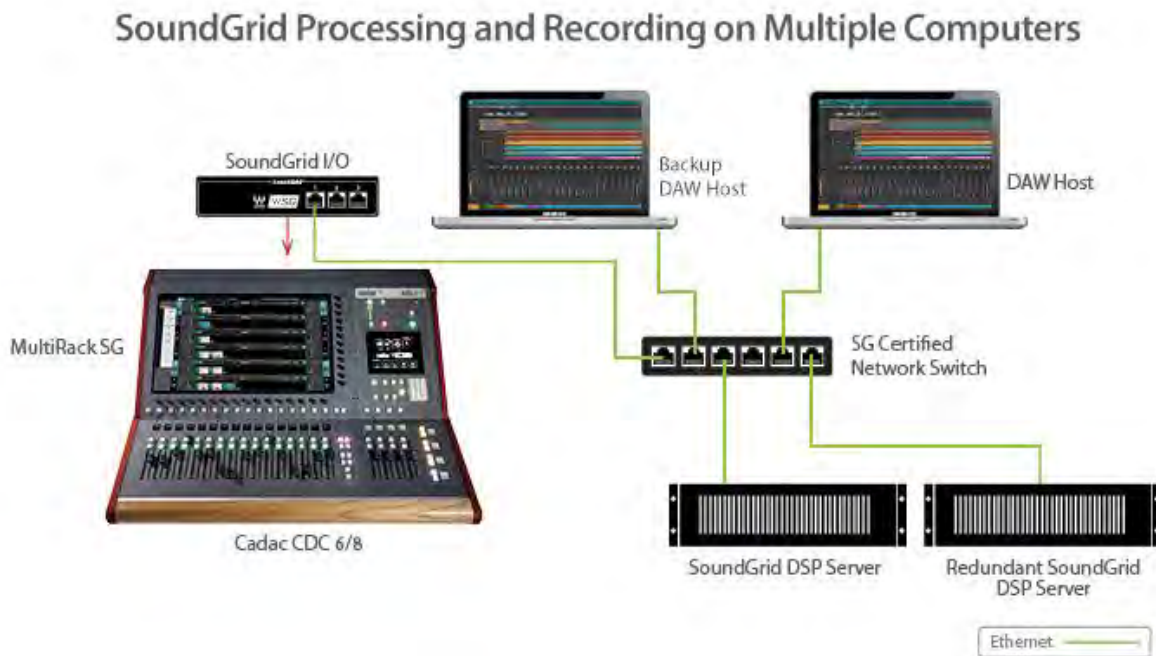- Compatible with standard computers and switches

- Redundancy and recovery options
- ASIO/Core Audio drivers for recording and playback
- Works with MultiRack SoundGrid software for setup and control
- Networks with every SoundGrid-enabled device

1.2 Typical Uses

The Cadac SoundGrid I/O can be used in both SoundGrid and Native configurations, as follows:

SoundGrid: In a SoundGrid configuration, the Cadac SoundGrid I/O is used in order to connect to a SoundGrid network for plugin processing and simultaneous DAW playback/recording. The SoundGrid configuration uses a dedicated SoundGrid DSP server to power the plugin processing, enabling super-low latency, high plugin counts, and networking capabilities, with the option of an additional backup DSP server.

Please note: A SoundGrid DSP server is required for SoundGrid configurations.

SoundGrid Processing and Recording on Multiple Computers

Native: In a Native configuration, the Cadac SoundGrid I/O is used in order to connect a console to the SoundGrid ASIO/Core Audio driver for plugin processing and/or DAW playback/recording. Since the Native configuration utilizes the computer's CPU to power the plugin processing, plugin count and overall system latency depend on the computer's CPU and sound driver capabilities.

Please note: A SoundGrid DSP server is not required for Native configurations.

Native Recording and Playback

1.3 Native/SoundGrid Comparison Table

Features	Native	SoundGrid
Low Latency		✔
Processing	✔	✔
Recording	✔	✔
Simultaneous Recording and Processing		✔
CPU Load	Your DAW computer's CPU	Dedicated SoundGrid DSP server
Backup DSP Server		✔
Networking		✔
I/O Interface	Cadac	Cadac
Plugin Host Software	MultiRack Native	MultiRack SoundGrid
Plugin Licenses	Native	SoundGrid

2. Hardware and Connectors

SoundGrid Ports 1-3 (Ethernet) connect the SoundGrid Network.

Status LED: All ports have a Gigabyte connection indicator.

Colors and respective status are as follows:

- Link/Act Led = flashing green
- GigE (Gigabyte Connection Indicator) = solid green

3. Installation and Configuration Overview

The ASIO/Core Audio drivers and control panel for the Cadac SoundGrid interface are installed using the Waves Central application, which also installs the SoundGrid driver and the SoundGrid Studio Application required for DAW recording and playback.
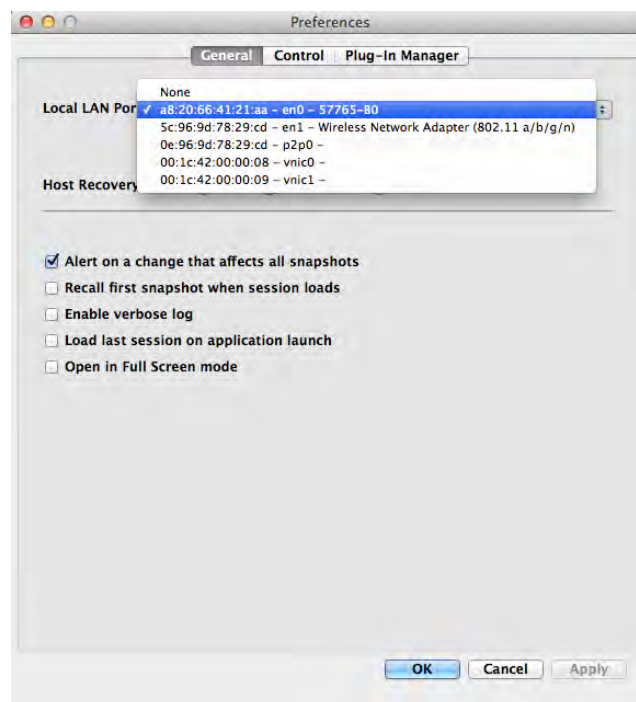
Download Waves Central here: http://www.waves.com/downloads/central

3.1 Installing the Cadac SoundGrid I/O

The Cadac SoundGrid I/O comes pre-installed in CDC consoles. For further instructions, please refer to your CDC manual.

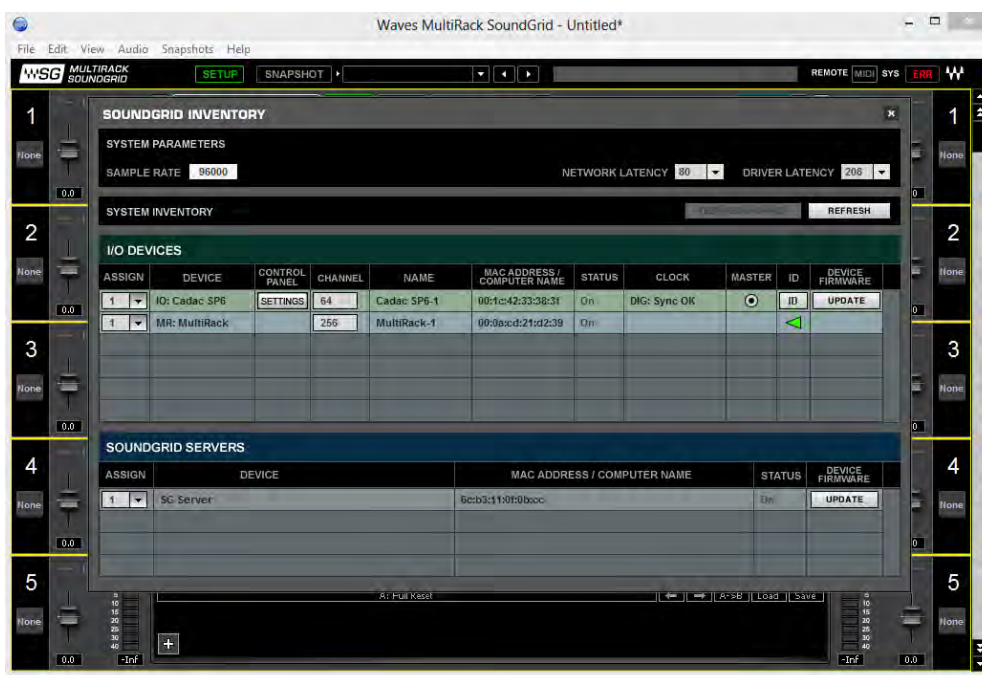## 3.2 Configuring the Cadac SoundGrid I/O in MultiRack SoundGrid

Configure the Cadac SoundGrid I/O in the **Inventory** window of MultiRack SoundGrid:

1. Launch the MultiRack SoundGrid application.
2. Enter the **Preferences** window by typing **Ctrl**+**P** (Windows) or **Cmd**+ (Mac), or from the appropriate application menus.
3. Under **Local LAN Port**, choose the adapter connected to the SoundGrid network and the Cadac SoundGrid I/O. Network adapters are displayed as Mac addresses and port names.

4. When you select the correct port, the message "SoundGrid Network Found" will appear on the panel. Close this window.
5. Open the **SoundGrid Inventory** window from the **Audio** Menu (F2). The **SoundGrid Inventory** window displays all SoundGrid I/O devices connected to your network.
6. Assign SoundGrid drivers in the **Assign** column. Use consecutive numbers for multiple devices, with the first unit assigned as number 1.
7. Assign SoundGrid DSP servers in the **Assign** column. The primary SoundGrid DSP server will be assigned as number 1. If you are using a redundant SoundGrid DSP server, assign it as number 2.

8. Assign your Cadac SoundGrid I/O (or I/Os) in the **Assign** column. Use consecutive numbers for multiple devices, with the first unit assigned as number 1.
9. **ID** activates LEDs on the card.
10. **Update** updates the device's firmware.

Native Configuration

Please refer to the Waves SoundGrid Studio System User Guide.

3.3 Configuring the Cadac SoundGrid I/O in SoundGrid Studio

This is a quick overview of what you need to know about SoundGrid Studio software to get your network up to speed. There's enough here to configure a simple network, assess network status, and set up your I/O devices. For more complex configurations, please refer to the SoundGrid and SoundGrid Studio user guides.

3.3.1 Setting up SoundGrid Studio

The SoundGrid Studio Application oversees the SoundGrid network and manages all network devices. To maintain network effectiveness, the SoundGrid Studio Application is always running in the background. Bring SoundGrid Studio to the front by clicking on the SoundGrid icon in the Mac Top Bar or the Windows System Tray.
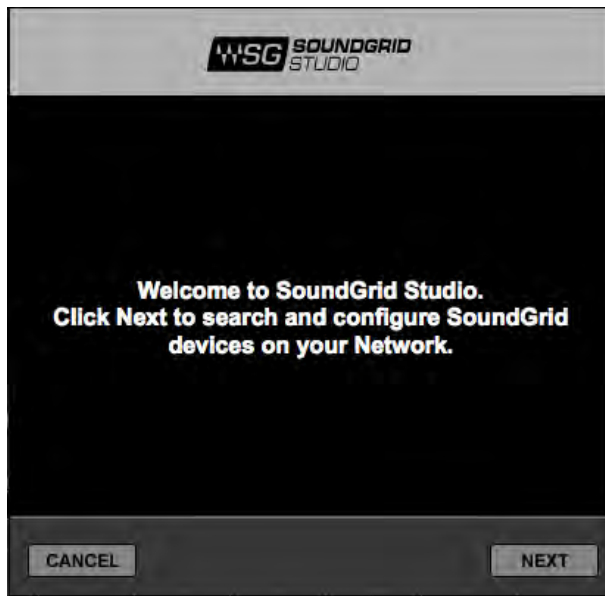

When SoundGrid Studio opens you will see the **System Inventory** page.

The first time you launch SoundGrid Studio, the Wizard will open. It scans the network, inventories its assets, and then configures the devices. If the Wizard does not start automatically, click the START Auto Config button, which is next to the Network Port.

Choose "NEXT" to start automatic configuration. This will take a few moments. Choose "CANCEL" to configure manually.

If the Wizard cannot locate the requested SoundGrid network devices, this means the devices might be off or not connected properly. In such a case the Wizard will allow you to rescan the network or work as a Driver node slaved to another system. For more information please refer the SoundGrid Studio User Guide.

When configuration is complete, close the window. If there is still a problem, you can configure your system manually. Use the **System Inventory** page to assign devices, control the network, and manage clock. To learn how to use this page, please refer to the user guides for SoundGrid Studio and StudioRack.

The first device added to a rack is designated as the Sync-over-Ethernet clock master and is placed in the first rack slot.

A populated device slot displays the mode, clock status, and sample rate of the I/O. The clock master device is indicated by its blue color and the icon text: On, Master Clock, INT (48 kHz).

To add another SoundGrid device, click on the arrow in an empty rack slot. From the list of available devices, choose the one that you want to add—in this case, a second Cadac SoundGrid I/O. In this image, Cadac SoundGrid is grayed out (and therefore unavailable) since it is already claimed.

The new device is visible in the rack slot. Unless changed by the user, it remains the clock slave and is colored green.

Use the same menu to change the assignment of clock master from one device to another, or to remove the device from the rack slot.

Now you know how to assign I/O devices and designate a device as the clock master. Click on the **Gear** symbol in the device slot to open the Cadac SoundGrid Control Panel in order to set up clock details and configure preamps.

3.3.2 Firmware Status and Updates

On the left of the device icon are two buttons:

FW indicates the status of the device's firmware. The user is given the choice to update it. Status indications are color-coded:

Gray	Compatible firmware
Blue	Compatible firmware, but a newer version exists
Red	Firmware not compatible and must be updated in order to use

Click on the FW button to launch the Reflasher. This will initiate a scan of the hardware and then offer options. Do not disconnect device or turn off computer until you see "Done."

ID activates LEDs on the card.