## IMPORTANT SAFETY INSTRUCTIONS

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 a dry cloth.
7. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near any heat sources such as radiators, registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the 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 third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord and plug from being walked on or pinched particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.
11. Only use attachments and accessories specified by Rane.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. The plug on the power cord is the AC mains disconnect device and must remain readily operable.
16. This apparatus shall be connected to a mains socket outlet with a protective earthing connection.
17. When permanently connected, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.
18. If rackmounting, provide adequate ventilation. Equipment may be located above or below this apparatus, but some equipment (like large power amplifiers) may cause an unacceptable amount of hum or may generate too much heat and degrade the performance of this apparatus.
19. This apparatus may be installed in an industry standard equipment rack. Use screws through all mounting holes to provide the best support.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

WARNING

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
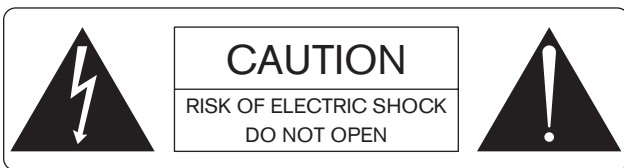
To reduce the risk of electrical shock, do not open the unit. No user serviceable parts inside. Refer servicing to qualified service personnel.

The symbols shown below are internationally accepted symbols that warn of potential hazards with electrical products.

This symbol indicates that a dangerous voltage constituting a risk of electric shock is present within this unit.

This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

Contents

GETTING STARTED

Rane Corporation welcomes you to the world of the Mongoose. May it help erase all lingering memories of tangled analog cables!

To help you get started with the installation of the Mongoose system, we have provided a simple breakdown of the key tasks and have presented them in the recommended order. If you are new to the Mongoose system, we recommend that you spend a few moments reviewing the basics of the system before beginning the installation. We understand that your job is to get this system installed as quickly and efficiently as possible. That's why we've kept the system overview short and sweet – you'll be through it in no time – and the background information you gain will be well worth the detour. You can find this System Overview on page 7.

Key Installation Tasks

There are five key tasks involved in the installation of a Mongoose system. An overview of each task is listed below, along with page references to the specific details for each task. We recommend that you review this entire list to get a sense of the work flow, and then return to the first task to begin the actual installation process. As you complete each task, return to this section to determine the next step. Note that the order of some of these tasks can vary. See each task description for more details.

Task 1: Install and connect the Mongoose.

This task involves the physical attachment of the Mongoose hardware to your audio rack. You can perform this task off-site or on-site. Once installed, you then connect the Mongoose as appropriate – to the Ethernet network, to the CobraNet network, and/or directly to another CobraNet device. If you are installing on-site, you may want to pull and terminate the CAT 5 cabling first (see Task 3) so that the cables are ready to connect to the Mongoose. For details on installation, see page 17.

Task 2: Configure the Mongoose.

Before the system can function properly, you must configure the Mongoose and the RADs. You perform this configuration using the Mongoose Tracker software that is shipped with the Mongoose hardware (and is also available on the Rane website). You can either configure the system by loading a configuration file that contains the appropriate settings and audio routing information, or you can edit the settings directly on a live device. We strongly recommend using a configuration file as a starting point.

In most cases, the audio designer will have already created this configuration file. This makes your installation job much easier because all you have to do is load the file into the appropriate device. For the purposes of this manual, we have assumed this to be the case – that the configuration file has already been created for you. If not – well, you're going to need to do a little more reading. You can find some tips and overview information about configuration files in the *Mongoose Design Manual* (available on the Rane website). But the best place to start is with the tutorials in the Mongoose Tracker help system. These tutorials walk you through the process of creating a configuration file. If the final configuration is to be completed later, but you merely want to install the equipment and make sure the system can send and receive audio, you can create a very simple configuration to accomplish this. See Task 5 for more information.

Regardless if you're creating a new configuration or simply loading a pre-defined configuration, you will need to install, start, and use the Mongoose Tracker software.

Note: The order of this task in the installation process is somewhat flexible. If you prefer, you can install and connect the Remote Audio Devices (RADs) prior to loading the configuration file. There are advantages, however, in loading the configuration first. Whether or not the configuration is loaded, if the Mongoose is powered on and connected prior to installing the RADs, you can determine immediately upon installing a RAD (by observing its status indicators) if it is functioning properly. If the configuration is also in place, however, you can immediately determine if the RAD model you just installed matches the model specified in the Mongoose configuration (if there's a mismatch, the RAD's status indicators flash red). Also, if you have wireless access to the Mongoose, loading the configuration file early in the process makes it possible to then view the configuration from a laptop as you're installing the RADs. If you do not have a configuration file and you plan to simply test that the installed equipment can successfully send and receive audio, disregard this recommendation. You will create a simple test configuration *after* you have installed all of the equipment. For details on Loading a Configuration File, see page 20.

Task 3: Pull and terminate the CAT 5 cabling for the RADs.

Each RAD connects to its host Mongoose via a CAT 5 cable. We recommend pulling this cable prior to installing the RADs because this makes it much easier to troubleshoot the installation of the RADs. Note that each RAD requires a *home run*. As noted in the previous task, if the CAT 5 cables are installed and terminated, and the Mongoose is powered on and connected, you can verify if the RADs are working properly as soon as you connect them. For details on this task, see page 22.

Task 4: Install and connect the individual RADs.

This task involves the connection of the RADs to the CAT 5 cable, followed by the physical installation of the RADs into the switchboxes in the wall. A key part of this task is to doublecheck that you are installing the correct RAD models in each location. The wiring diagram should specify which RAD models go in which locations. Also, if you load the Mongoose configuration prior to installing the RADs, you can view the RAD's status indicators to determine if you have installed the correct model. If the models do not match, the RAD's bottom four LED indicators flash red. In addition to verifying that you've installed the correct model, this task involves the verification that the RAD hardware is communicating properly with the Mongoose. Again, the RAD's LED indicators provide this information. For details, see page 23.

Task 5: Verify connections, perform audio test, troubleshoot, and save the final configuration.

After installing the Mongoose, the RADs, and the configuration file, you need to verify that everything is working properly.

Important Note for Installers who do not have a Configuration File: If you do not have a pre-defined configuration file but you want to verify that the equipment works, you need to create a simple verification configuration. See page 31 for details.

You'll be happy to see that Rane has taken much of the guesswork out of the verification process. Although you will review the LED status indicators on the RADs and on the Mongoose at the time you install these components, we recommend doublechecking these indicators in the final verification task. There are three primary sources of information to help you quickly troubleshoot any problem:

1. **RAD indicators**: By simply viewing the indicators on the front of a RAD, you can see immediately if the RAD is receiving power, if its data communications connection is working, if its transmit (Tx) and receive (Rx) functionality is working, if it is actively receiving an audio signal, if its audio signal is overloading, and if its model matches the model configured for the port to which it is attached.

2. **Mongoose indicators**: Indicators on the Mongoose provide power and signal information for all the RADs connected to that host device as well as information about the Mongoose's participation in the CobraNet and Ethernet networks.

3. **Mongoose Tracker messages**: Once the configuration file is loaded into the device, you can use the Mongoose Tracker to determine if you installed the appropriate RADs in each location or if a RAD is configured incorrectly. The software displays color-coded messages telling you of any problems. The software also contains the audio routing matrix, which you should examine if there are audio problems that cannot be traced to a hardware issue. It's possible that the audio routing was configured incorrectly.

When you have completed the installation, fully tested the system, and feel confident that the configuration is accurate, SAVE AND BACK UP THE CONFIGURATION FILE! If you or someone else inadvertently (or even deliberately) changes configuration settings on a live device and, as a result the system stops working, you will be very happy that you have a backup. For more details on this, see page 27.

Now, on with the Mongoose installation … (details begin on page 17).

SYSTEM OVERVIEW

So what *is* this Rane Mongoose system and why on earth does it have such a funny name?

System Origins

Rane Corporation is well aware of the pain, expense, and frustration of pulling and managing miles of analog cable throughout a large audio installation, not to mention the potential for inferior sound quality. For this reason, we have certainly heralded the advent and rapid adoption of digital audio networking. It's likely that you have, too. But we realized that there were still a few situations in which current networking solutions didn't quite solve the problem. The most popular systems that are currently available (CobraNet and Ethersound) use large bandwidth Bundles for transmitting the audio signal. For example, CobraNet Bundles contain up to 8 channels of audio. So if you have only a few channels within a given space, how can you use these current networking solutions without wasting a tremendous amount of bandwidth? It's difficult. In fact, it isn't possible, unless you implement a Mongoose system. The Mongoose system is designed to distribute digital audio signals over CAT 5 wiring between low channel count locations and your CobraNet network. It solves the bandwidth problem by allowing you to aggregate up to 8 channels that you can then route as a single maximized CobraNet Bundle.

Now – about the name. In the animal kingdom, a mongoose is a furry, yet ferocious creature ranging from one to four feet in length. These creatures, which are found in Asia, Africa, the Caribbean, and southern Europe, are known for their agility and cunning – so fast and smart that they can capture venomous snakes, even king cobras. Rane chose this name because this system is designed to *wrestle* and *control* all those analog cables you've been handling in the past. The Mongoose also aggregates channels to maximize the bandwidth available in *Cobra*Net Bundles. Clever, huh?

System Components

A Mongoose system contains three primary components:

1. The *host device* (called the Mongoose) to which you can connect up to eight Remote Audio Devices (RADs). You can then connect the Mongoose to your Ethernet network (for setup and control) and to additional CobraNet-enabled audio equipment. The Mongoose is typically located in the audio rack room.
2. The *RADs* that serve as the input/output devices located in the rooms in which you want to send or receive audio.
3. The *Mongoose Tracker software* (a Microsoft Windows application), which you use to configure and troubleshoot the system.

Another key player in a Mongoose system is the CobraNet network. Although there may be a few scenarios in which CobraNet is not required (for example, sending audio from one RAD to another RAD on the same Mongoose), most applications will take advantage of the power of CobraNet. Combining a RAD and CobraNet network allows you to digitize and aggregate scattered channels and efficiently route them to any location within the entire audio system.

Installation Requirements

To include a Mongoose/RAD network in an audio system, the system must meet the following requirements: If you plan to use CobraNet to communicate between a Mongoose and other audio devices, those devices must be CobraNet-enabled.

- You must have access to a computer running Microsoft Windows® XP (Service Pack 2 or higher) or any version of Vista (including 64-bit). The computer must also have an Ethernet port, which you use to connect the computer to the Mongoose (either directly or via an Ethernet network). This connection is necessary for using the Mongoose Tracker software to load configuration information into the device and also for monitoring detailed status information. Note that some status information is visible on the hardware itself.
- You must have administrative rights to install (or upgrade) the Mongoose Tracker software, but you do not need administrative rights to run the software. Note that you also need administrative rights to manually start or stop the RaneLink service (a Windows service installed with Mongoose Tracker that runs at system boot up to ensure the establishment of communications between Mongoose Tracker and the Mongoose). Manual control of this service is rarely needed.
- Most RADs require two, three, or four-gang standard switchboxes (for installation into a wall). The switchbox must have a minimum depth of 2¼" (57 mm).

Required Ports

The Mongoose and Mongoose Tracker exchange information using the following ports and protocols:

Port	Protocol	Purpose
68	UDP	DHCP Client (Note that Mongoose and Mongoose Tracker might both use this port to communicate with a DHCP server. This port is not actually used for communication between Mongoose and Mongoose Tracker).
3998	TCP	Communications messages (for example, Locate, Signal/OL, audio routing matrix changes, and so on).
3999	TCP	Bulk data transfer (sending new configuration files and firmware updates).
5353	UDP	Mongoose Discovery (UDP-Bonjour).

Using the Mongoose Documentation

In addition to this installation manual, the Rane documentation set includes an introductory data sheet, design manual and a software help system. The *Mongoose Design Manual* (available on the Rane website) is intended for audio designers who are including a Mongoose system in their design. It provides background information, sample applications, and best practices for incorporating a Mongoose in an audio system. The software help system, which is embedded in the Mongoose Tracker software application, contains tutorial simulations to introduce you to the software, background information on Mongoose and RAD configuration, detailed information about the user interface as well as detailed procedures for accomplishing specific tasks. We also recommend that you periodically check the Mongoose page on the Rane website for the latest information on the system (for example, software updates, the release of new RAD models, etc.).

Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
Mac and Mac OS are trademarks of Apple Inc., registered in the United States and other countries.

Hardware Details

Following are illustrations and descriptions of the Mongoose host device and a typical RAD.

The Mongoose Host Device

The primary purpose of the Mongoose host device is to connect up to eight RADs to a CobraNet network. It is typically housed in the audio rack room along with the DSP and other audio equipment. In addition to hosting the RADs, the Mongoose does the following:

- Provides power to the connected RADs
- Stores configuration settings for itself and for each of the connected RADs
- Provides a connection to an Ethernet network for control of the Mongoose and RADs
- Provides connections to both a primary and secondary (backup) CobraNet network
- Displays various status indicators (LEDs) which provide information about the health of the system
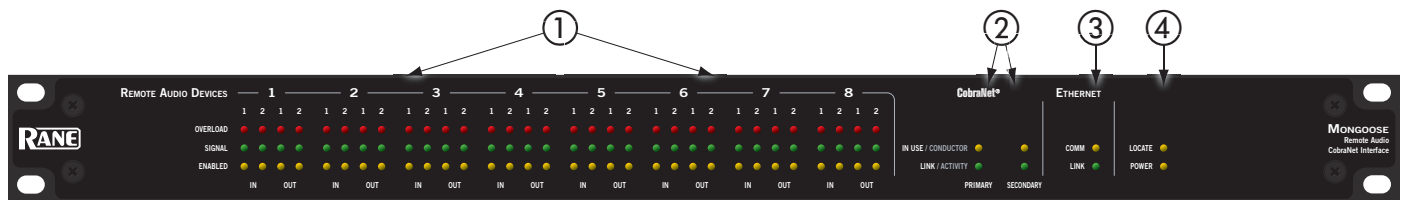
Front Panel Description

Figure 1: Front panel of the Mongoose

① The **Remote Audio Devices status indicators** provide information about the RAD audio channels. The numbers 1 through 8 at the top of the front panel correspond to the RAD ports 1 through 8 on the back of the Mongoose. For example, the status indicators for number 1 provide information about the RAD connected on port 1.

Under each RAD number are four audio channels, two input and two output. These represent the maximum number of channels a RAD is capable of transporting. However, not all RAD models use all four channels. For example, the RAD1 model provides two microphone inputs, so for that model, only the two columns of indicators labeled IN would be active.

There are three types of indicators:

🔴 **Overload** LED (red) –indicates that the channel is experiencing a signal overload.

🟢 **Signal** LED (green) – indicates the presence of an audio signal on this channel

🟡 **Enabled** LED (yellow) – indicates the availability of the associated audio channel. If a RAD is connected on this port and all Enabled lights are off, this indicates a problem with the CAT 5 connection or with the RAD. If the Enabled LEDs are flashing, this indicates that the physical RAD model does not match the RAD model specified for this port in the Mongoose's configuration.

② The **CobraNet status** indicators provide information about the Mongoose's CobraNet connection. There are two sets of indicators for each CobraNet network – **Primary** and **Secondary**. Of course, the secondary network indicators function only if you have implemented a secondary (or backup) CobraNet network.

- 🟡 **In Use/Conductor** LED (yellow) – indicates that the CobraNet port is in use, in other words CobraNet packets are being sent or received by the Mongoose. If the Mongoose has auto-negotiated to be the CobraNet Conductor, this LED flashes (indicating it is both in use and is the Conductor). If you have connected both the primary and secondary CobraNet ports, only one of your CobraNet networks will be active (or in use) at any given time, therefore, only one In Use/Conductor indicator will be active.

- 🟢 **Link/Activity** LED (green) – indicates the CobraNet network is connected, and flashes if there is activity on the network. If the Mongoose is connected to another CobraNet device or network switch but the Link LED is off, this indicates a problem with the connection. If you have connected both the primary and secondary CobraNet ports, the Link LED for both ports should be on.

③ The **Ethernet status** indicators provide information about the Mongoose's Ethernet connection.

- 🟡 **Comm** LED (yellow) – flashes when the Mongoose is sending or receiving network packets to or from the Mongoose Tracker software.

- 🟢 **Link** LED (green) – indicates if the Ethernet network is connected. If the Mongoose is connected to an Ethernet network but the Link LED is off, this indicates a problem with the connection.

  Note: If an installation does not include an Ethernet network, this indicator is relevant only when you connect a computer directly to the Mongoose. If the connection is working properly, the Link LED lights up.

④ The remaining indicators on the front panel are the **Locate** and **Power** LEDs:

- 🟢 **Locate** LED – flashes green when you place this device in Locate Mode (via the Mongoose Tracker software). The purpose of this locate functionality is for verification, when working in the software, of the physical device you are configuring or viewing. This is helpful when you are working with multiple Mongoose devices. For more information about this functionality, see the software help system.

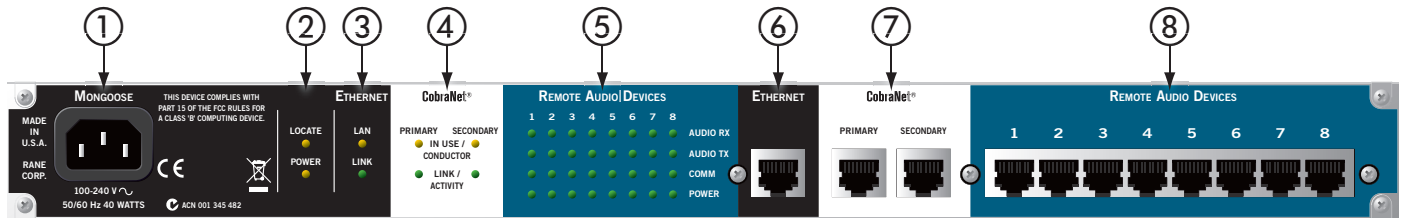- 🟡 **Power** LED – indicates the Mongoose is powered on.

Rear Panel Description

Figure 2: Rear panel of the Mongoose

① **Power IEC jack** – connects to AC line voltage, 100-240 V, 50-60 Hz.

② The **Power** and **Locate LEDs** on the back panel serve the same purpose as those on the front.

③ The **Ethernet Link LED** on the back panel serves the same purpose as the one on the front. The **Ethernet LAN LED** flashes when the Mongoose detects any Ethernet packets on the network.

④ The **CobraNet LEDs** (**In Use/Conductor** and **Link/Activity**) on the back panel serve the same purpose as those on the front.

⑤ The **Remote Audio Devices LEDs** on the back panel serve a different purpose from the ones on the front. The front panel LEDs provide information about signal activity on each audio channel. The back panel LEDs indicate the health of the CAT 5 connection between each RAD and the Mongoose. Just as on the front panel, these LEDs are numbered 1 through 8 which correspond to the numbered ports on the device. Each LED corresponds with one twisted pair within the CAT 5 cable. If the twisted pair is functioning properly, the LED displays a solid green light.

- **Audio Rx LED** – lights solidly if the Mongoose's receive pair is working properly.
- **Audio Tx LED** – lights solidly if the Mongoose's transmit pair is working properly.
- **Comm LED** – lights solidly if the RAD's data communications pair is working properly.
- **Power LED** – lights solidly if the Mongoose is supplying adequate power to the RAD port.

⑥ **Ethernet port** – used to connect the Mongoose to an Ethernet switch or directly to a computer. Note that this Ethernet port contains auto-MDIX functionality, which means that if you connect directly from this port to a computer, you can use either a standard Ethernet patch cable or a crossover cable to make the connection. The auto-MDIX functionality takes care of coordinating the proper connection between the devices.

⑦ **CobraNet ports** – used to connect the Mongoose to another CobraNet-enabled device or to a network switch. Use the **Primary** port to connect your primary CobraNet network. If you have a backup CobraNet network, connect the Mongoose to it using the **Secondary** port. Both ports have the same Media Access Control (MAC) address. Note that the CobraNet ports do NOT contain auto-MDIX functionality. Therefore, if you use this port to connect the Mongoose directly to another CobraNet device, you MUST use a crossover cable.

⑧ **Remote Audio Devices ports** – used to connect each RAD to the Mongoose via a standard CAT 5 cable. You must use a standard Ethernet patch cable for this connection.
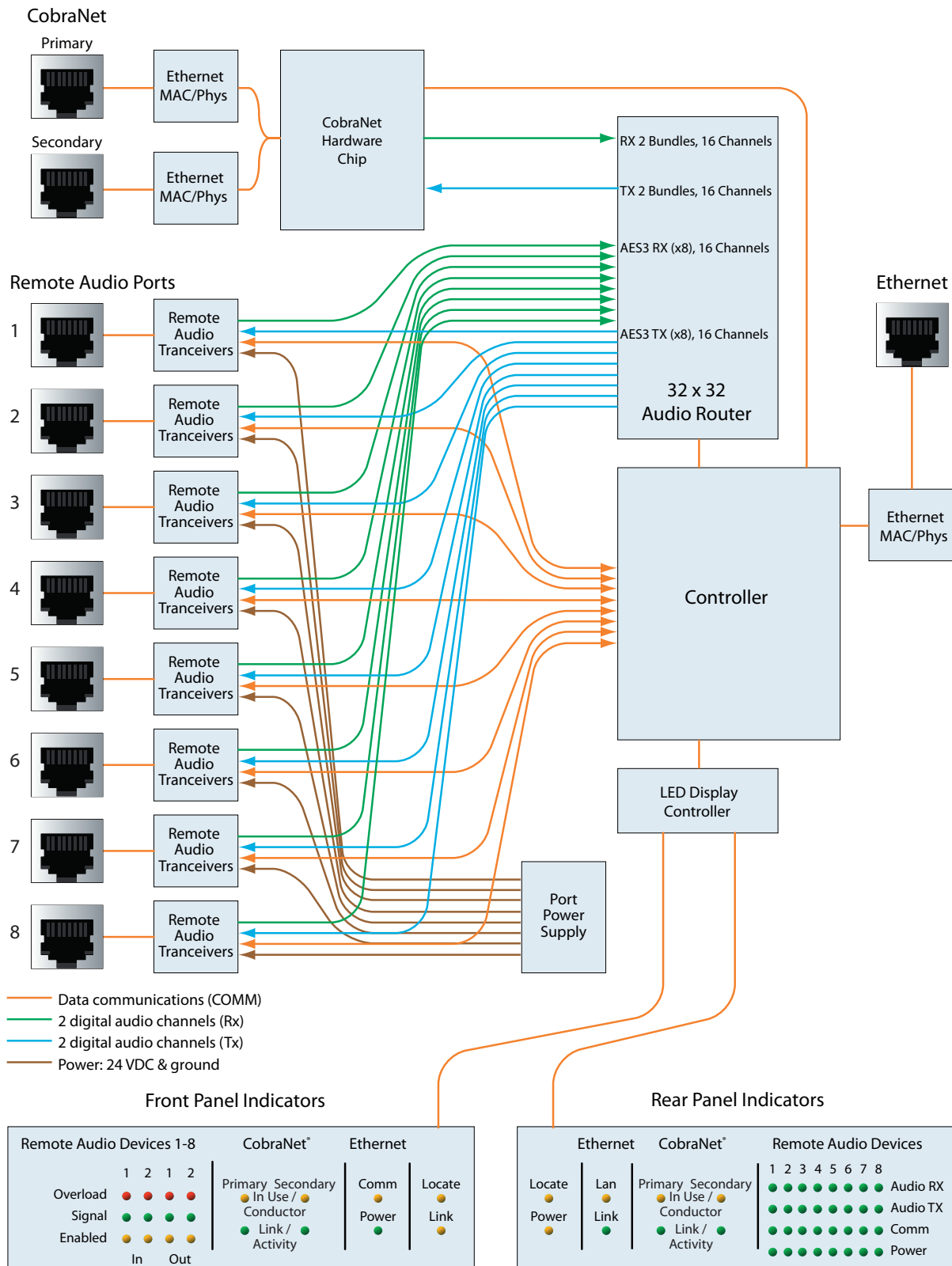
Mongoose Block Diagram

CobraNet

Primary

Secondary

Ethernet MAC/Phys

Ethernet MAC/Phys

CobraNet Hardware Chip

RX 2 Bundles, 16 Channels

TX 2 Bundles, 16 Channels

AES3 RX (x8), 16 Channels

AES3 TX (x8), 16 Channels

32 x 32 Audio Router

Remote Audio Ports

1 — Remote Audio Tranceivers
2 — Remote Audio Tranceivers
3 — Remote Audio Tranceivers
4 — Remote Audio Tranceivers
5 — Remote Audio Tranceivers
6 — Remote Audio Tranceivers
7 — Remote Audio Tranceivers
8 — Remote Audio Tranceivers

Ethernet

Ethernet MAC/Phys

Controller

LED Display Controller

Port Power Supply

— Data communications (COMM)
— 2 digital audio channels (Rx)
— 2 digital audio channels (Tx)
— Power: 24 VDC & ground

Front Panel Indicators

Remote Audio Devices 1-8					CobraNet®		Ethernet	
	1	2	1	2	Primary Secondary		Comm	Locate
Overload	●	●	●	●	● In Use / ●		●	
Signal	●	●	●	●	Conductor		Power	Link
Enabled	●	●	●	●	● Link / ●		●	
	In		Out		Activity			

Rear Panel Indicators

Ethernet		CobraNet®		Remote Audio Devices	
Locate	Lan	Primary Secondary		1 2 3 4 5 6 7 8	
		● In Use / ●		● ● ● ● ● ● ● ●	Audio RX
Power	Link	Conductor		● ● ● ● ● ● ● ●	Audio TX
		● Link / ●		● ● ● ● ● ● ● ●	Comm
		Activity		● ● ● ● ● ● ● ●	Power

Figure 3: Block diagram of the Mongoose

Remote Audio Devices

The primary purpose of a Remote Audio Device (RAD) is to amplify, digitize, and transmit a digital audio signal via CAT 5 cable to a Mongoose host device. RADs can also receive a digital signal from the Mongoose and then convert it to analog before sending it to its attached audio equipment. RADs are capable of transmitting and receiving up to four channels of digital audio (two in each direction). Rane offers various RAD models, some of which handle a maximum of two channels.

In addition to transmitting digital audio, the CAT 5 cable that connects the RAD to the Mongoose also provides power to the RAD and a path for data communications. This makes it possible to control the RAD's configuration settings, view status information, and update a RAD's firmware – all from the host Mongoose. The following picture illustrates how the four twisted pairs within the CAT 5 cable are utilized:
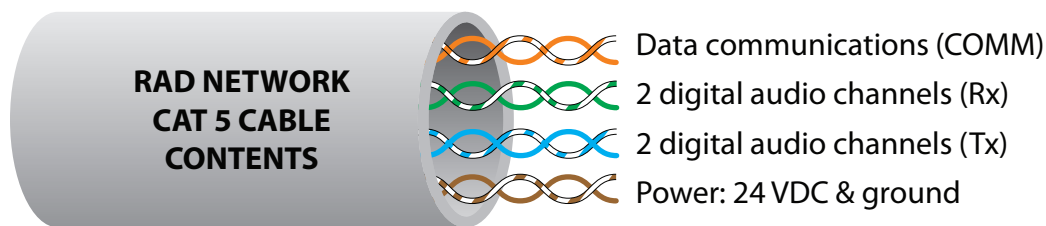
Figure 4: Purpose of each CAT 5 twisted pair

The **orange pair** is reserved for data communications between the RAD and the Mongoose. Data communications is needed for such things as sending configuration information from the Mongoose to the RAD, sending firmware updates from the Mongoose to the RAD, and sending status information from the RAD to the Mongoose.
NOTE: Configuration information for a specific RAD (for example, LED intensity, microphone sensitivity, and RAD and channel names) is stored in the Mongoose, not in the RAD. This makes it easy to swap in a new RAD, if necessary, without losing configuration data.

The **green pair** carries two channels each of balanced, differential, digital audio. *Rx* refers to audio that the RAD receives from the Mongoose.

The **blue pair** carries two channels each of balanced, differential, digital audio. *Tx* refers to audio that the RAD sends to the Mongoose.

The **brown pair** provides 24 VDC power and ground for the RAD. This is obviously the wire you should check if it appears a RAD is not receiving power.
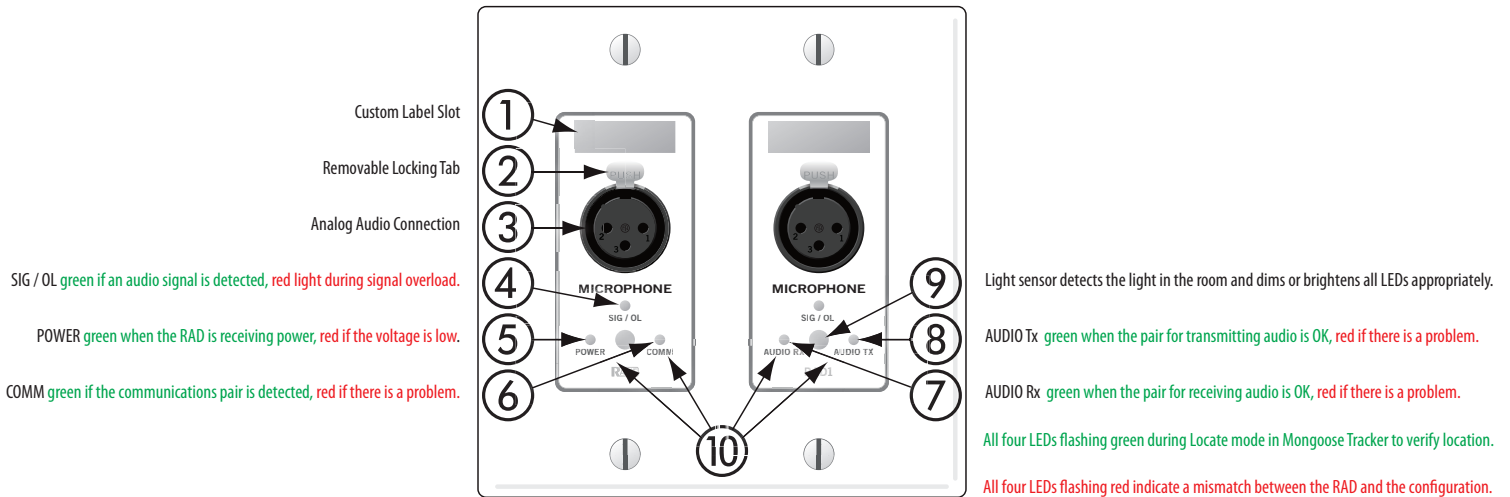
Typical RAD Front Panel

Custom Label Slot

Removable Locking Tab

Analog Audio Connection

SIG / OL green if an audio signal is detected, red light during signal overload.

POWER green when the RAD is receiving power, red if the voltage is low.

COMM green if the communications pair is detected, red if there is a problem.

Light sensor detects the light in the room and dims or brightens all LEDs appropriately.

AUDIO Tx green when the pair for transmitting audio is OK, red if there is a problem.

AUDIO Rx green when the pair for receiving audio is OK, red if there is a problem.

All four LEDs flashing green during Locate mode in Mongoose Tracker to verify location.

All four LEDs flashing red indicate a mismatch between the RAD and the configuration.

Figure 7: Remote Audio Device

① **Label** – a location on the RAD for inserting a custom label of the input, output or channel number associated with the corresponding jack. See Generating RAD Labels on page 34 for details.

② **XLR tab** – push tab for releasing a microphone cable. If you wish to remove this tab, see page 25.

③ **Input/Output jacks** – the actual jacks to which you connect the appropriate audio device(s). The jacks differ based on the RAD model.

④ **SIG/OL LED** – displays a green light when an audio signal is detected, displays a red light when the channel is experiencing a signal overload.

⑤ **Power LED** – displays solid green when the RAD is receiving power, turns solid red if the voltage received is lower that expected.

⑥ **Comm LED** – displays solid green when the RAD detects the communication pair of wires and communication is established between the Mongoose and RAD. The LED displays solid red if the RAD cannot communicate with the Mongoose, likely due to a communication pair wiring problem.

⑦ **Audio Rx LED** – displays solid green when the RAD detects that the pair of wires for receiving audio is functioning properly, regardless of the RAD model, displays red if there is a problem.

⑧ **Audio Tx LED** – displays solid green if communication with the Mongoose has been established and the Mongoose informs the RAD of the Tx Audio lock. The light displays solid red, if there is a problem communicating with the RAD or if there is a problem with the Audio Tx pair of wires.

⑨ **Light sensor** – detects the amount of light in the room and dims or brightens all LEDs appropriately. If the room where the RAD is installed is very dark and the "Allow LEDs to turn off" option is enabled, the LEDs will go completely dark. If this is the case and you need to see the lights, simply shine a light (from a flashlight or some other source) on the RAD. Note that you cannot permanently turn these lights off manually. This is by design. We wanted to avoid the possibility of anyone thinking the RAD is defective (because the power light is off) and attempting to replace it unnecessarily.

⑩ **Locate mode** (all four flashing green) – Mongoose Tracker software has a feature to verify the physical location of a specific RAD or Mongoose. When you place a RAD in Locate mode, the Power, Comm, Audio Tx, and Audio Rx LEDs on the front of the corresponding RAD flash green. The flashing continues until you cancel the request in the software, place another RAD in Locate mode, interrupt the connection between the computer and the Mongoose, disconnect the RAD, or power cycle the Mongoose.

Mismatch mode (all four flashing red) – When a RAD is connected to a RAD port on the back of a Mongoose device a comparison is made between the physical RAD model and the RAD model specified for this port in the Mongoose's configuration. If there is a mismatch the Power, Comm, Audio Tx, and Audio Rx LEDs on the front of the corresponding RAD flash red.

Following is an illustration of the back of a typical RAD:
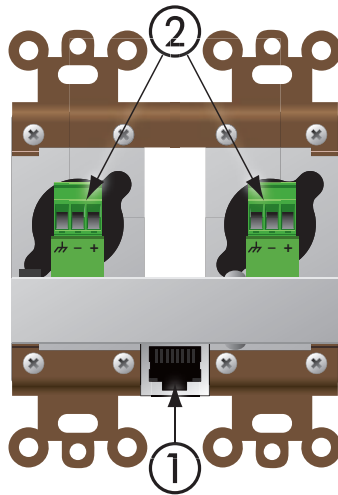
Figure 6: Back of a RAD

① RJ-45 (8P8C) jack for the CAT 5 cable.

② Euroblock connectors to use if paralleling microphone jacks

(**Disclaimer:** As it is poor design to plug two microphones into a single microphone input, we do not recommend this practice. If, however, you have a situation that warrants it, proceed with caution. We recognize that paralleling microphone jacks can lower the cost of your audio system.)

NOTE: RADs are *hot-swappable*. In other words, you can replace a RAD without having to power down the system. The Mongoose automatically detects the new RAD and configures it using the configuration data stored in the Mongoose. If the configured RAD and the physical RAD do not match, the Mongoose front panel **Enabled** LEDs for this RAD flash yellow. At the same time, the RAD's **Power**, **Comm**, **Audio Rx** and **Audio Tx** flash red during a mismatch.

Mongoose Tracker Software

The Mongoose Tracker allows you to configure and troubleshoot the RADs and Mongoose devices in your audio system. The software is shipped with the Mongoose product. It is also available free-of-charge on the Rane website. To run the software, you must have Microsoft Windows® XP (SP2 or higher) or Vista on your computer. To communicate with your Mongoose audio system, you must connect your computer to the appropriate network switch or use a standard Ethernet patch cable (or a crossover cable) to connect it directly to a Mongoose.

Using the Mongoose Tracker, you configure each Mongoose RAD port with the RAD model that should be connected to it. You also configure various settings for each RAD, for the Mongoose itself, and for the CobraNet network. One of the key configuration tasks is to set up the audio routing for your Mongoose system. You do this using the audio routing matrix that appears in the Mongoose Tracker's main window. More detailed information about the audio routing matrix is available in the *Mongoose Design Manual* and in the Mongoose Tracker help system.

In addition to configuring the Mongoose components and the audio routing, the software is a valuable tool for troubleshooting any issues that may arise. Although you can determine a lot from the hardware status indicators, the software allows you to drill down and pinpoint the problem with greater accuracy.
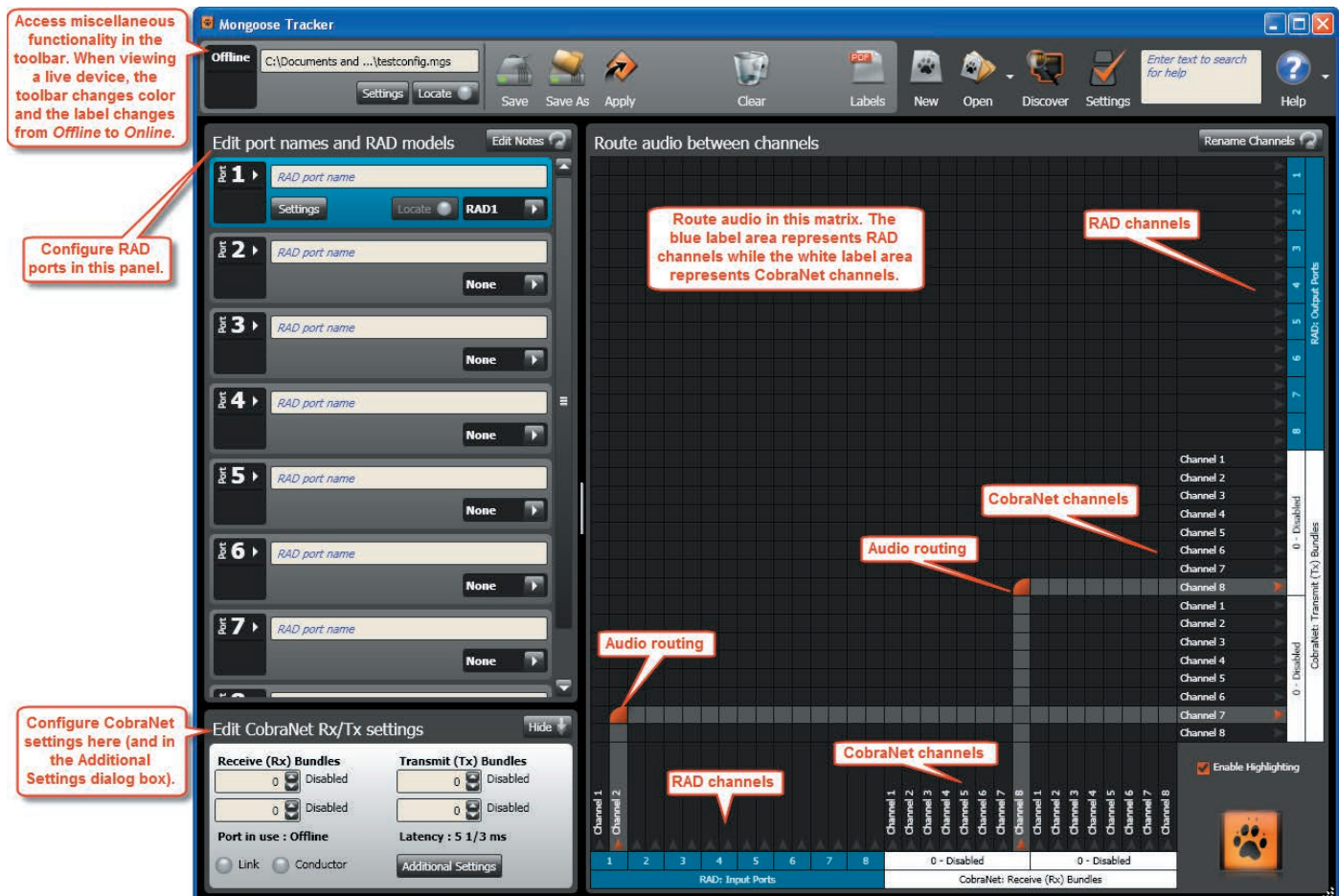
Figure 7: Mongoose Tracker main window

TASK 1: INSTALLING THE MONGOOSE

You can work on-site or off-site to install the Mongoose into the audio rack. Following are a few things to consider for each approach.

- *If installing on-site*, we recommend that you install, connect, power on, and configure the Mongoose and install and terminate the CAT 5 cable prior to installing the RADs. Done in this order, you can verify that the RADs are working properly as soon as you connect them.

- *If installing off-site*, you will obviously not be installing the RADs into walls. We do recommend, however, that you load the configuration file and connect the RADs to the Mongoose during the off-site installation so that you can fully test the configuration. This is also a good time to label the RADs to ensure that you install and connect the same RADs in the same Mongoose ports on which they were tested. See page 34 for details on generating and attaching RAD labels.

Installing the Mongoose in your Audio Rack

Following are the detailed steps for installing the Mongoose hardware into the audio rack and connecting it to the Ethernet and CobraNet networks. You can rely on the LED indicators on the hardware for basic device and connection status information. To see more details about the system status, however, you'll need to install the Mongoose Tracker software. But first, let's start with the hardware. To review the front and rear panel hardware details, see page 9.

To install and connect the Mongoose:

1. Attach the Mongoose (and all other audio equipment) to the audio rack.

2. If the system will be using an Ethernet network, connect the Mongoose to it. Plug one end of a standard Ethernet patch cable (or an Ethernet crossover cable) into the **Ethernet** port on the back of the Mongoose. Plug the other end into the Ethernet network switch. An Ethernet crossover cable is provided with the product.

   Note: If there is no Ethernet network, you can skip this step for now. You will use this port later to connect a computer directly to the Mongoose (for configuration and management of the device).

   IMPORTANT: If your network requires that the Mongoose use one or more static IP addresses, you must configure these addresses prior to connecting the Mongoose to your network. To do so, you must connect your computer directly to the device, install and start the Mongoose Tracker software, and then open the device and configure its IP address(es). For details on connecting your computer to the device and for installing the software, see page 34. For details on configuring the device's IP addresses, see the Mongoose Tracker help system (the topic titled "Viewing and editing the network settings for a Mongoose device").

3. If the system will be using a CobraNet network, connect the Mongoose to it. If connecting to a network switch, plug one end of a *standard Ethernet patch cable* (or a crossover cable) into the **Primary** CobraNet port on the back of the Mongoose. Plug the other end into the CobraNet network switch. If connecting directly to another CobraNet-enabled device, plug one end of an *Ethernet crossover cable* into the **Primary** CobraNet port on the back of the Mongoose. Plug the other end into the appropriate CobraNet port on the back of the other audio device.

4. If a backup CobraNet network exists, use the **Secondary** CobraNet port to connect the Mongoose to the backup network switch.

5. Using the IEC power cord provided with the product, connect the Mongoose to a power outlet or power strip. The **Power** LED (located on both the front and rear panels of the Mongoose) lights up.

6. Verify that the Ethernet connection is working properly.
   - When plugged into any working Ethernet port, the Ethernet **Link** LED (located on both the front and rear panels) lights up.

   - If there is activity on the network (in other words, network packets are being transmitted), the Ethernet **LAN** LED (on the rear panel) flashes.

   - The Ethernet **Comm** LED (on the front panel) flashes if the Mongoose hardware is communicating with the Mongoose Tracker software.

7. Verify that the CobraNet connection is working properly.
   - The CobraNet **Link/Activity** LED (located on both the front and rear panels) lights up. If the **Link/Activity** LED flashes, this indicates that there is currently activity on the CobraNet network. Note that if you have connected both the **Primary** and **Secondary** CobraNet ports to a CobraNet network, this **Link/Activity** LED lights up for both networks.

   - The **In Use/Conductor** LED lights up for the CobraNet port that is active. In other words, if you have both a primary and secondary CobraNet network and have, therefore, connected both the **Primary** and **Secondary** CobraNet ports, the **In Use/Conductor** LED indicates which of the networks is being used. Unless there is a problem, this will typically be the primary network. If this Mongoose has auto-negotiated to become the CobraNet conductor, the **In Use/Conductor** light flashes.

8. If the CAT 5 cabling for the RADs has already been installed and terminated, connect the cables to the appropriate RAD ports on the rear panel of the Mongoose.

Installing Multiple Mongoose Devices

If you are installing more than one Mongoose, we recommend that you connect and name each device before proceeding. Each device is shipped with the same factory default name – *Mongoose.* By connecting and naming them all at once, there's a greater assurance that you will provide a unique identifier for each device, which in turn will make the configuration step much easier and less prone to error.

To connect and name multiple Mongoose devices:

1. Connect each Mongoose as described on page 17.

2. Follow steps 1 through 4a in the Loading a Configuration File section on page 20.

3. After completing step 4a in Task 2, you should be viewing the **Device Discovery** dialog box which displays a list of the Mongoose devices detected on the network. For each Mongoose in the list, click its associated **Locate** button to determine which physical device it represents (see *Locating a Hardware Device* on page 29 for details), and then type a unique name for the device in the **Display Name** column.
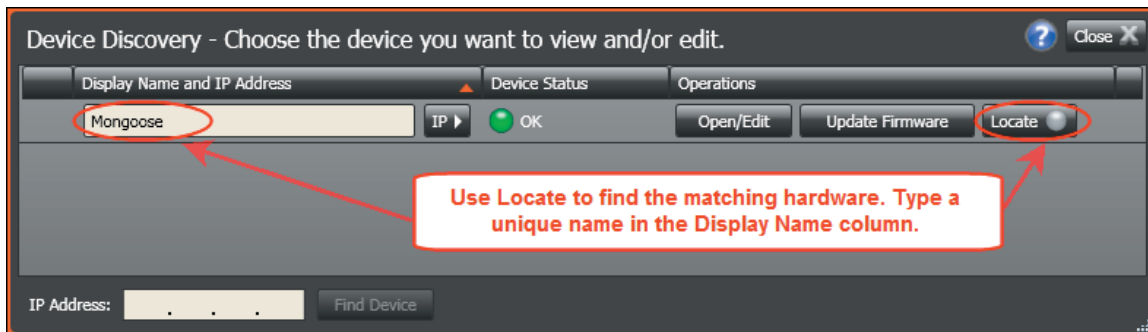
4. Proceed with the detailed configuration of each device (steps 4b – 6, and 8 in Task 2).

TASK 2: LOADING A CONFIGURATION FILE

Although listed as the second task in the installation process, this can occur later in the process if necessary. To help with troubleshooting, however, we recommend loading this file prior to installing the RADs.

Note: If you do not have a configuration file, but you want to test that the equipment is working properly, you can create a very simple configuration for verification purposes. It's best to do this after installing the RADs. See page 31 for details.

To load a configuration file into a Mongoose:

1. Verify that the Mongoose is powered on and working properly.

2. If you haven't already, download and install the Mongoose Tracker software. See page 33.

3. Connect your computer to the Mongoose. See page 34 for details.

4. Select the device you want to configure.

    a. Open the **Device Discovery** dialog box (click **Discover** in the toolbar).
        Note: The **Device Discovery** dialog box contains a **Device Status** column that provides information on the status of each device. If a device has yet to be configured, its status will vary depending on whether or not the RADs have been installed and connected. If the device detects no connected RADs and no configuration has been loaded, its status will be **OK**. In other words, no RADs are configured and no RADs are found. If the Mongoose detects connected RADs and no configuration has been loaded, its status will be **RAD Model Mismatch**. In other words, no RADs are configured but the Mongoose found one or more connected RADs. This message will change to **OK** once you load the configuration file and correct any configuration errors.
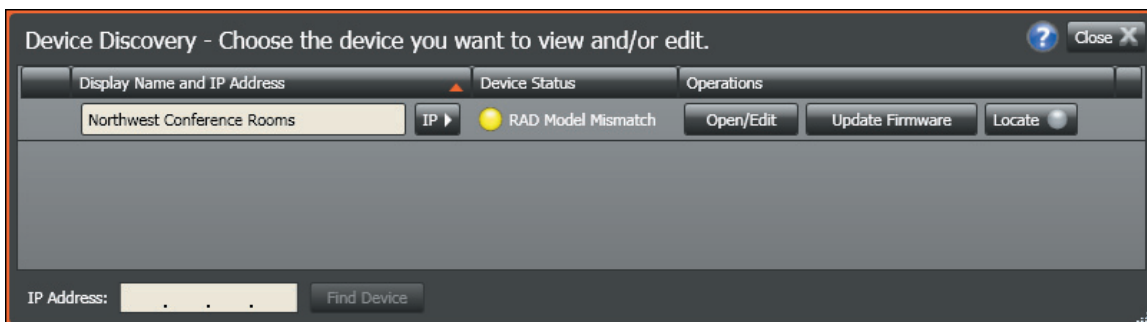
    b. Click the **Open/Edit** button for the Mongoose you want to configure. The device's current configuration displays in the main screen of the Mongoose Tracker. If you have already installed the RADs, the ports to which the RADs are connected display a RAD Model Mismatch status (as explained in step 4a above).
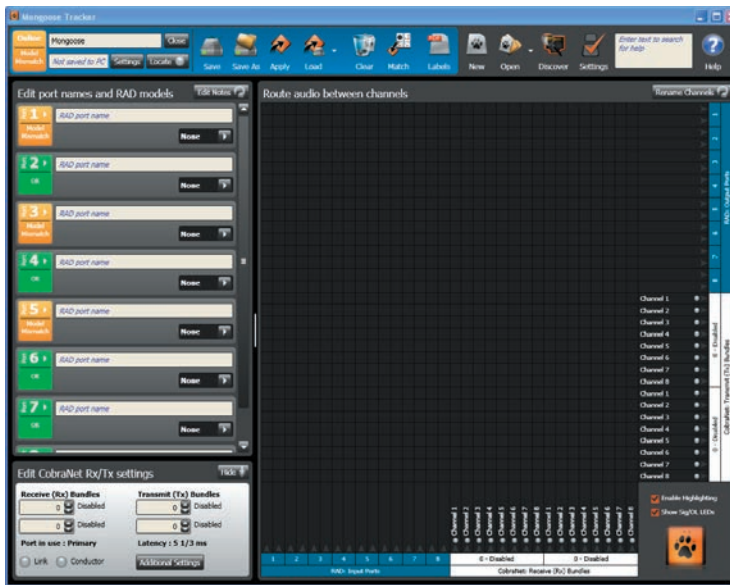
Note: If your system contains multiple devices and you are unsure of which one to open, use the Locate functionality to find the corresponding physical device. See *Locating a Hardware Device* on page 29 for details.
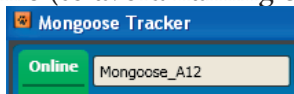
5. Load the configuration file.

   a. Click the **Load** icon in the toolbar.
      This opens a browse dialog box from which you can select the configuration file to load.

   b. Select the file you want and click **OK**. The configuration settings are immediately applied and saved to the Mongoose. If the Mongoose detects any mismatches between the configured RADs and the physical RADs connected to the Mongoose, these mismatches are reported in the RAD area. If you are loading the configuration prior to installing any RADs, each configured RAD port will report an error. This is because it expects to find a connected RAD, but instead it finds nothing. When the correct RAD models are installed, these errors disappear. Troubleshooting the configuration is described in more detail on page 27.

6. Click the **Edit Notes** icon at the top of the RAD area: . Here you can review notes the audio designer may have included with any special instructions. You can change the font size by clicking **Settings** in the toolbar and adjusting the **Font Size** setting.

7. In upper left corner edit box, type the name for this Mongoose (if it needs a new name). This device name is saved to the device, but it is not saved to the configuration file (to avoid naming collisions

   if you were to load the same configuration file into another device):

8. Make any other edits necessary to complete the configuration. Typically, none are needed.

21

TASK 3: PULLING THE CAT 5 CABLE

You can terminate and plug in the CAT 5 cable prior to or after installing the Mongoose into the audio rack. We recommend that you install the cable and the Mongoose before installing the RADs.

If you're curious how the twisted pairs within the CAT 5 cable are utilized for audio transmission, data communications, and power, see the illustration and explanation on page 13. Knowing how the wires are used can be helpful when troubleshooting the system.

Following are a list of things to consider when installing the CAT 5 cable:
- The maximum allowed distance of CAT 5 cable connecting a RAD to a Mongoose is 150 meters (500 feet). The audio design dictating your installation most likely takes this limitation into consideration. But it's important to doublecheck that no CAT 5 cable you pull exceeds this distance.

- We recommend that you clearly label each end of each CAT 5 cable you install. This makes it much easier to connect the proper CAT 5 cable to the proper port on the back of the Mongoose and to the RADs. It also helps guarantee that you install the proper RAD in each designated location.

- Speaking of labels, you should generate and insert a label to each RAD prior to installing it. It's possible you did this during an off-site build of the audio rack. If the audio designer did not provide you with labels, you can generate and print them yourself from within the Mongoose Tracker software or you can use the default labels supplied with each RAD. See page 35 for details. If the RADs are not available yet, you can still generate the labels and insert them later.

- Most RADs mount in standard two or four-gang switchboxes with a minimum depth of 2¼" (57 mm).

Terminating the CAT 5 Cable

The Mongoose system wiring complies with the standard CAT 5 T568-A or T568-B termination. You can use a CAT 5, a CAT 5e, or a CAT 6 cable (UTP and 24 AWG). To comply with the FCC and European emissions standards, you should use cable that has screened twisted pairs (four unshielded twisted pairs surrounded by a single foil shield with a drain wire). This is referred to as F/UTP, S/UTP, FTP, and ScTP. You'll also sometimes see the term STP, although technically this refers to individually shielded twisted pairs. For the remainder of this manual, we'll be using the term CAT 5 to represent all of these choices.

When terminating the cable, it is important to maintain the natural twist of each wire pair as close to the termination as possible. Use a standard RJ-45 connector to terminate the cable. Note that outputs are short-circuit protected.

Trivia: What are commonly referred to as RJ45 jacks are not RJ45 at all but are 8P8C (8 Position 8 Contact) modular connectors. We'll bow to convention, however, and use the more recognized term of RJ-45.

The following graphic illustrates the T568-B termination and also shows the function of each wire pair on the RAD network.

RJ-45 (8P8C) Connector

Data communications (COMM)
2 digital audio channels (Rx to RAD)
2 digital audio channels (Tx from RAD)
Power: 24 VDC & ground

CAT 5 CABLE

1
2
3
4
5
6
7
8

Tab is on far side
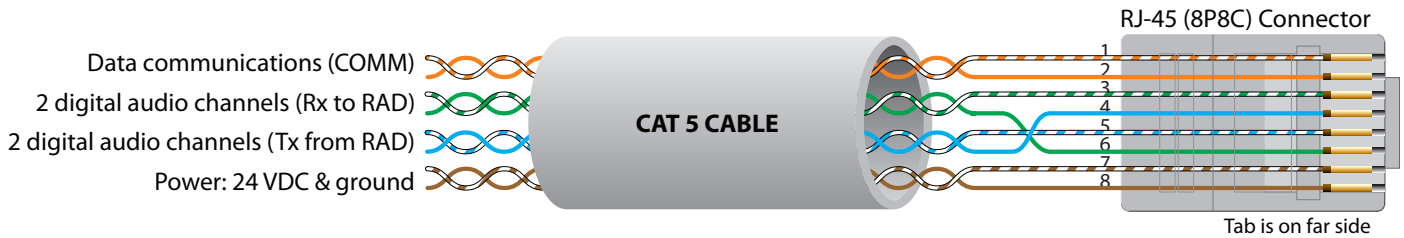
TASK 4: INSTALLING THE RADS

Once the CAT 5 cable is in place and the Mongoose is installed, connected, and configured, you can begin installing and testing the RADs. Two RAD installation procedures are described in this section. The first provides the details of installing and testing RADs in a new Mongoose system. The second explains how to change out a RAD – in other words, how to replace a RAD in an existing Mongoose system.

Before installing the RADs, you may want to familiarize yourself with the RAD's functionality and hardware features on page 14. Also, if the audio designer did not provide you with labels for the RADs and you have not yet generated them, you may want to print them before installation process. See page 35 for details.

Installing and Testing RADs in a New Mongoose System

Important Note: Doublecheck that the Mongoose is connected and powered on (and, preferably, configured) before beginning the RAD installation.

To install a RAD:

1. Confirm that the proper switchbox (two gang or four gang depending on the RAD model) is installed and that the CAT 5 cable is terminated.

2. Confirm that you are installing the correct RAD model in each location. The model number appears on the bottom right of the RAD's front cover:

Labels go here (behind the Lexan window)

MICROPHONE
SIG / OL
POWER   COMM

MICROPHONE
SIG / OL
AUDIO RX   AUDIO TX
RAD1

RAD model
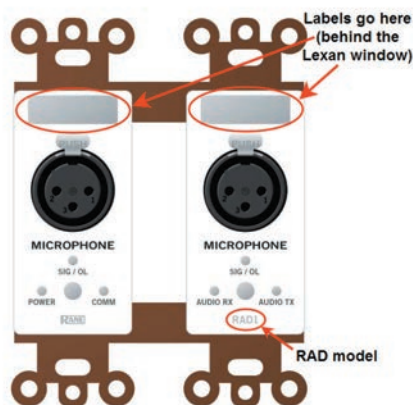
Labelling the RADs ahead of time provides additional verification the right one is being installed.

3. Plug the CAT 5 cable into the jack on the back of the RAD.

4. View the RAD's status indicators to determine if you installed the correct model and if the RAD is communicating properly with the Mongoose. As long as the Mongoose is connected and powered on, the RAD's status indicators should activate as soon as you connect the CAT 5 cable.

- If the RAD is functioning correctly (and the Mongoose configuration matches the physical RADs), the following four LED indicators turn green: **Power**, **Comm**, **Audio Rx**, and **Audio Tx**. Each of these LEDs corresponds to a twisted pair within the CAT 5 cable, and a green light indicates that the twisted pair has been detected by the Mongoose and is working properly. See page 23 for more details on the functionality of each twisted pair.
  If you have connected the RAD and one or more of these LEDs turns solid red or does not light up at all, this indicates a problem. See page 41 for troubleshooting. If the LEDs flash red, however, this simply means there is a mismatch between the physical RAD model and the configured RAD model (see the next bullet).
  Also, if you notice the intensity of these lights varying from time to time, there is no need to schedule an appointment with your eye doctor! Each RAD contains a light sensor that detects the amount of light in the room. As the light in the room gets darker (which can be simulated by passing your hand over the light sensor), the intensity of the LEDs fades. This is to prevent the RADs from glowing brightly in a darkened room. Note that you can set the intensity of these LEDs within Mongoose Tracker. See the software help system.

- If the RAD model you install does not match the model configured for the associated Mongoose RAD port (only relevant if you have already configured the Mongoose), the bottom four LEDs on the RAD flash red. If the models do not match, determine which model is needed and install it. See *Verify the RAD Configuration* on page 27 for details.

- Status information for each RAD port on the Mongoose is displayed on the front and rear panel of the Mongoose. As long as all four indicators on a RAD are green, there is no need to check these LEDs on the Mongoose. If a RAD indicator is solid red, however, view the corresponding indicators on the Mongoose to determine if the problem is originating there. Following are descriptions of the indicators on the Mongoose:
    i. The RAD indicators on the rear panel correspond with the indicators on the individual RADs, providing information on the health of the wiring. If a RAD is functioning properly and the Mongoose is communicating properly with the RAD, all four indicators on the rear panel of the Mongoose should be green for each connected RAD.
    ii. The RAD indicators on the front panel provide information about the actual connection and any activity between each RAD and the Mongoose. For each port to which a RAD is connected, the **Enabled** indicators for each active RAD channel should be yellow. (If the **Enabled** LEDs are flashing yellow, they indicate the RAD model specified in the Mongoose configuration does not match the physical RAD model detected on the port.) If audio is flowing through the system, you may see activity on the **Signal** and/or **Overload** indicators.

5. When you are confident that the RAD is working properly, you can attach it to the switchbox (inserting the label first, if you have it).

- If the RAD contains an XLR tab and you do not need it, you should remove it before attaching the RAD to the wall. You can do so by inserting something with a small tip in the back of the RAD where the XLR tab is connected. Push down on the metal connection and pull the XLR tab away from the RAD. The connectors in the RADs are manufactured by Neutrik. We have found that the pins provided by Neutrik for removal of the XLR tab work much better for this task than paper clips, straight pins, or anything else you might find lying around the office. If you do not have a Neutrik pin available, contact Rane Corporation and we will gladly send one to you.

- Label the RAD (if it was not already labeled off-site). The RADs are shipped with factory labels inserted. You can use these, but in most cases you will probably want to customize the label. If your audio designer did not provide you with customized labels, you will need to generate them. See page 34 for details. Insert the paper label in the slot behind the Lexan window and trim the excess paper. If you do not need to use the label slot (for example, you may be labeling the RAD some other way), you can flip over the factory-provided label and insert it.

- Use the captivated screws on the RAD to attach it to the switchbox. Note that the screws are in slots so that you can adjust the device if need be (for example, to level it inside a switchbox that isn't level). Also, take note of the four metal circles at the top and bottom of each RAD input and output – the ones that look like Mickey Mouse ears! You can bend or snap these off and use them for various purposes. For example, if the switchbox is not flush with the wall, you can slightly bend one or more of these circles to make the RAD flush with the wall. Also, using a pair of needle-nose pliers, you can easily snap them off, and use them as washers behind the screws.
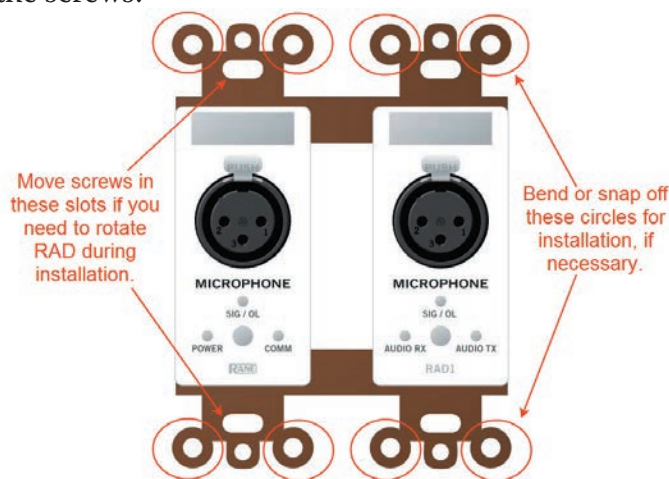
Figure 8: Adjusting RAD to make it flush with wall

- Attach the Decora plate using the provided hardware.

Installing a RAD in an Existing Mongoose System

If you need to install a new RAD after a Mongoose system is already up and running, the process is fairly simple. RADs are *hot-swappable.* In other words, you can replace a RAD without having to power down the system.

If you are installing a RAD in an existing Mongoose system, you are likely doing one of three things:
- Installing a new RAD
- Replacing a RAD that is not working
- Replacing a RAD with a different RAD model

In all three situations, the Mongoose behavior is the same. It automatically detects the new RAD and compares its model number to the model number configured in the Mongoose for that port. If the model numbers match, the Mongoose sends the relevant configuration data as well as any required firmware updates to the RAD. If the model numbers do not match, the Mongoose front panel **Enabled** LEDs flash yellow, also the four indicators on the RAD (**Power**, **Comm**, **Audio Rx**, and **Audio Tx**) flash red.

To install an additional RAD into an existing system:
1. Follow the same procedure that was outlined in the previous section. You do not need to power down the Mongoose before or after installing the RAD.

2. Update the Mongoose configuration to reflect the additional RAD.
   - If you were given a new configuration file that includes the additional RAD, you need to load it into the Mongoose. See Loading a Configuration File on page 20.
   - If you do not have a configuration file, you need to configure the live device. See the software help system for details. Remember to save the new configuration to a file.

To replace an existing RAD with the same RAD model:
1. Remove the old RAD by detaching the Decora plate, unscrewing the RAD from the switchbox, and unplugging the CAT 5 cable.

2. Connect the CAT 5 cable to the replacement RAD.

3. Verify that all four status indicators (**Power**, **Comm**, **Audio Rx**, **Audio Tx**) are green. If one or more of them are red, troubleshoot the problem. See page 41 for tips. If all four lights flash red, this indicates a model mismatch with the Mongoose configuration. Doublecheck that you are installing the correct RAD model. You may want to use the Mongoose software to doublecheck the configuration and gather more information. See page 27 for information on verifying a RAD configuration.

4. Attach the RAD to the switchbox.

   Note: When replacing a RAD with the same model, the Mongoose automatically sends configuration data to the RAD. You don't have to do a thing except verify that the RAD is working properly. This makes the process of replacing a RAD as simple as using a screwdriver! Pop the old one out, put the new one in, check for green lights, and you're finished.

To replace an existing RAD with a different RAD model:

1. Follow steps 1 through 4 above.

2. Using the Mongoose Tracker software, view the configuration for the Mongoose. Since you have installed a different RAD model than was there before, you will see an error for the port on which this RAD is connected. You can either load a new configuration file that contains the new RAD or manually change the configuration of the device to reflect the new RAD model that you just installed.

3. If you have made changes to the existing configuration, save the configuration to a file (for safekeeping).

TASK 5: VERIFYING AND FINALIZING THE INSTALLATION

You've installed all the hardware and have loaded the configuration settings into the Mongoose. You're almost finished. All that is left is to verify everything is configured correctly, audio is working properly, and to save the final system configuration to a file.

Verify the RAD Configuration

At this point, you have already viewed the RADs' status indicators to verify they are functioning properly and that the proper RAD models were installed if the Mongoose was pre-configured. Although these status indicators provide valuable information, you can glean even more information from within the Mongoose Tracker.

Note: If you do not have a configuration file, you may want to create a simple verification configuration so you can test that the installed devices are working properly. See *Creating a Verification Configuration* on page 32 for details.

To verify the RAD configuration:

1. In the Mongoose Tracker software, view the configuration for the Mongoose you are verifying. (Click **Discover** to open the **Device Discovery** dialog box. Click the **Open/Edit** button for the Mongoose you want to view.)

2. Verify that the RADs are connected and configured properly. Look at the list of numbered RAD ports on the left side of the Mongoose Tracker screen. Are all the boxes green? If so, congratulations! Everything is A-OK. If, however, you see a smattering of red or yellow, you have a little extra troubleshooting work to do.

The following annotated screen shot illustrates what we're talking about:

Shows the overall status of the Mongoose device, with the most serious error taking precedence.

Displays the status of the specified RAD port.

Note that if there is a mismatch, you can get additional information by hovering your cursor over the RAD status.

This message indicates that the Mongoose detects a RAD model 4 is connected to this port.

Model Mismatch: None Configured, but RAD4 Detected

Locating a Hardware Device

If you want to doublecheck which physical hardware device you are viewing within the software, try using the **Locate** feature. This feature is available for both RAD and Mongoose devices. Within the Mongoose Tracker, you'll see a **Locate** button for the Mongoose as well as for each RAD. The following screen shot points out these buttons:
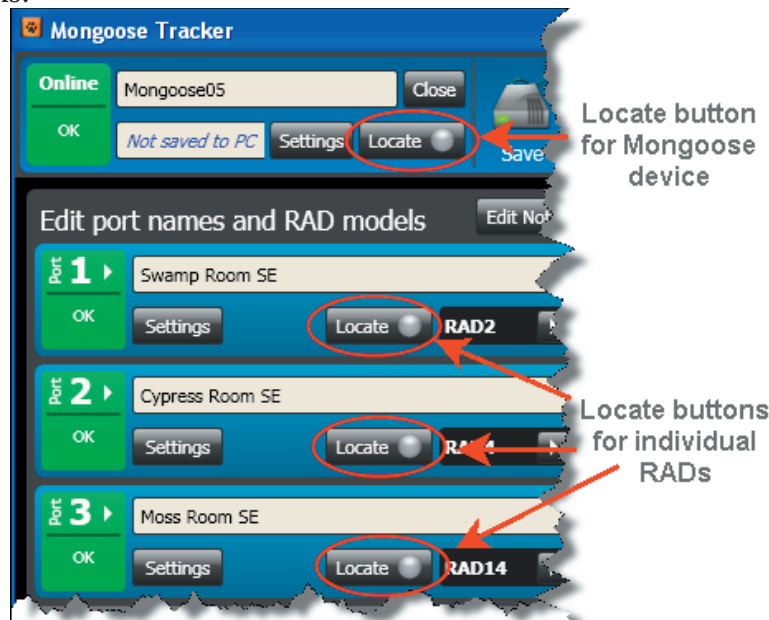
To locate a Mongoose, click the **Locate** button near the Mongoose name in the upper left corner of the screen. This causes the **Locate** LED indicator on the front and rear panels of the corresponding Mongoose to flash.

The LED continues to flash until you deselect the Locate button in the software, place another Mongoose in Locate mode, disconnect from the device, shut down the software, or cycle power to the Mongoose.

To locate a RAD, click the Locate button associated with the RAD you want to find.
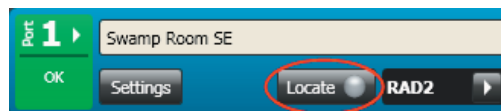
This causes the bottom four status LEDs on the RAD to flash green (as opposed to flashing red which indicates a model mismatch). These LEDs continue to flash until you deselect the Locate button in the software, place another RAD in Locate mode, disconnect the RAD, shut down the software, or cycle power to the Mongoose.

Note: As outlined above, the bottom four status LEDs flash green to indicate Locate mode and flash red to indicate a model Mismatch. To aid those that may have difficulty distinguishing the two colors, the rate at which these LEDs flash is also different for each mode. The rate for indicating a model mismatch (flashing red) is twice as fast as the rate used to indicate locate mode (flashing green).

Swapping RAD Ports

You've pulled all the CAT 5 cable, terminated all the connections, installed and connected the Mongoose and all the RADs, and have taken great pains to identify each cable that connects the RADs to the Mongoose device(s). You fire up Mongoose Tracker and (Rats! Er – Mongeese!), you've connected some of the RADs to the wrong ports. You placed the RADs in the right physical locations, but you simply connected them to the wrong ports on the back of the Mongoose. You could crawl around in the rack room disconnecting and reconnecting cables to ports, making obsolete your neat and tidy cable dressing OR you could make a few clicks in the software and resolve the problem while maintaining the integrity of your dressing. The software includes a nifty feature that allows you to *swap* one port configuration with another. This changes the configuration of the Mongoose (or of the configuration file, if you are working offline), and maintains the integrity of the routing matrix (if one exists).

To swap one RAD port configuration with another:

1. In the main window of the Mongoose Tracker, find the RAD ports that you want to swap.

2. Click the small arrow to the right of one of the port numbers you plan to swap. A list of available port numbers appears.
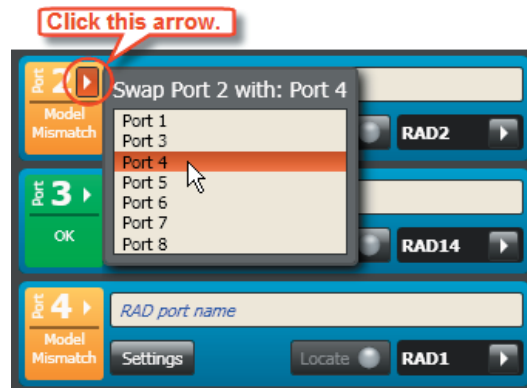
3. From the list of port numbers, select the one you want to swap with this port. For example, let's say that you connected a RAD1 on Port 2 and a RAD2 on Port 4 (opposite from what's in the configuration file). You therefore want to swap these two ports. As shown in the above screen shot, you would select the arrow on Port 2 and then select Port 4 from the list. Mongoose Tracker then takes all the configuration information for Port 4 (the RAD model number, its name, its settings, even any audio routing involving Port 4) and transfers it to Port 2. It does the same for Port 2, moving all of its configuration information to Port 4. The swapped port numbers should turn green, indicating that the configuration now matches the detected RAD models.

4. Save a backup copy of the changed configuration file.

Perform an Audio Test

After verifying that the RADs are configured correctly and working properly, you should perform an audio test. As noted earlier, the Mongoose configuration contains an audio routing matrix that specifies how audio should flow through the system. The only way to fully test this routing matrix is to perform an audio test. View the **Signal** and **Overload** LEDs on the RADs to verify that the audio signal is flowing correctly. To learn more about the audio routing matrix, see the Mongoose Tracker help system.

Save the final configuration file.

We already delivered our lecture on the benefits of saving your configuration to a backup file – so we won't do that again. Instead, we'll just tell you how to do it.

To save a Mongoose configuration to a file:

1. In the Mongoose Tracker toolbar, click **Save As**.

   Note: If the file has already been saved and you are merely saving a change to it, you can click **Save** instead of **Save As**.

2. In the **File Name** text box, browse for or type the name you want for the file. The default file extension is `.mgs`.

3. Click **Save**. The file name appears in the toolbar, as shown below:
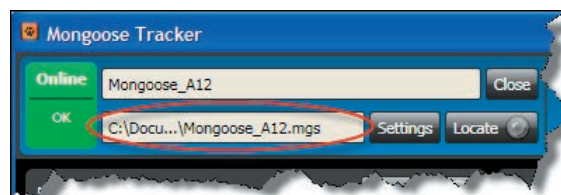
Creating a Verification Configuration

Even if you do not have a pre-defined configuration file or the necessary information to create one for your system, you can still test that the installed devices can send and receive audio signals. You do so by using the Mongoose Tracker to create a very simple verification configuration to perform this testing. This procedure assumes that you have installed and connected all the RADs and Mongoose devices and have verified that the devices are communicating successfully (by viewing their status indicators.)

To perform a simple verification of audio signal receipt and transmission:

1. Open the Mongoose Tracker software.

2. Open the Mongoose you want to test. Because you have not loaded a configuration file into the device but you have installed the RADs, the software reports configuration errors. In most cases, these will be model mismatch errors. In other words, the Mongoose is reporting that it is not configured for the RADs it detects on its ports.

3. To quickly fix the model mismatch problems, click **Match** (in the toolbar). This causes the Mongoose to configure its RAD ports to match the model numbers it detects.
   Caution: If you have installed a pre-defined configuration file, you would rarely use this functionality. The model mismatch message serves as an alert that either a RAD was installed or configured incorrectly. Clicking **Match** erases this alert, obscuring the fact that a mistake was made. In this case, however, when you're simply creating a configuration to test the transmission of audio signals, the Match functionality makes your job much easier! We do recommend, however, that you check your RAD installation against your drawings to confirm that they are in the correct locations. In addition, you can use the Locate functionality (see page 30) for further verification.

4. You can now begin testing the audio. First, we'll discuss testing the audio input.
    a. Select a RAD output channel to use for your test. Plug an audio output device into it (for example, a loudspeaker).

    b. Select a RAD input channel to test. Plug an input device into the RAD (for example, a microphone).

    c. Using the audio routing matrix in the Mongoose Tracker software, route the input RAD channel to the output RAD channel. For details on working with this matrix, see the Mongoose Tracker help system.

    d. Make some noise! Speak into the microphone, play a CD, or do whatever is appropriate for the type of input channel you are testing. Verify that the audio reaches the output device.

    e. Repeat the above steps for each RAD input channel you want to test. You will need to change the routing matrix each time you test a different channel.

5. Now test the audio output. This step is much quicker!
    a. Select a RAD input channel to use for your test. Plug an audio input device into it.

    b. Plug an audio output device into each of the RAD output channels you want to test.

    c. Create an audio routing matrix that routes the audio input to all of the audio output channels you are testing.

    d. Make some more noise! Speak in to the microphone or play a CD, etc. Verify that the audio reaches each output device.

INSTALLING AND USING THE MONGOOSE TRACKER SOFTWARE

This section provides some of the basic procedures for working with the Mongoose Tracker software component of the Mongoose system. You will find a brief overview of the software on page 16. More detailed information is available in the application's help system.

Installing Mongoose Tracker

A CD containing the Mongoose Tracker software is included with your Mongoose hardware. If you're like most people, however, that CD is gone – accidentally tossed in the recycle bin along with the cardboard box. If that's the case, no need to worry. Simply go to the Rane website and download the software, free-of-charge. **Note: you must be logged with administrator rights to install this software.**

Installing the software is simple:
1. Insert the CD in your computer (or click the download button on the Mongoose web page).
2. If downloading the software, on the **File Download** box that appears, click **Run**. If you want to save the installation file to your computer, click **Save**.
3. When the download completes (or after inserting the CD), click **Run** to begin the installation. The installation program first verifies the contents of the setup package. This may take a few moments.
4. When the verification completes, the Welcome screen appears. Click **Next**.
5. The License Agreement appears. After reading the agreement, click the box that indicates you accept the terms, and then click **Next**.
6. Select the type of install you want. The options are **Complete**, **Compact**, or **Custom**. Unless you have very limited disk space, the **Complete** option is recommended. Click **Next**.
7. Indicate the location in which Mongoose Tracker should be installed. By default, Mongoose Tracker is installed in `C:\Program Files\Rane Corporation\Mongoose Tracker`. Click **Next**.
8. Click **Next** again to begin the installation and configuration of Mongoose Tracker.
9. If any additional components need to be installed (for example, the Microsoft .NET framework or Apple Bonjour) or if a previous version of Mongoose Tracker needs to be uninstalled, the installation application displays this information. Click **Next** to continue with the installation. The installation application uninstalls the previous version of Mongoose Tracker (if necessary), installs any needed components, and then installs the Mongoose Tracker application. This process may take several minutes.

10. When the installation is complete, the following dialog box appears: Click **Finish** to complete the installation and open Mongoose Tracker.
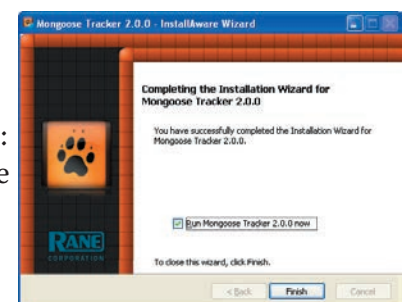
Starting Mongoose Tracker

1. On the **Start** menu, point to **All Programs > Rane Corporation > Mongoose Tracker**.
2. From the choices that display, select the Mongoose Tracker application: A splash screen displays until the application loading completes, then you see the main Mongoose Tracker window.

Connecting a Computer to the Mongoose

To load the configuration file, you obviously need a communications channel between your computer and the Mongoose. To do this, you can either connect your computer directly to the Mongoose or, if the Mongoose is connected to a network, connect your computer to that same network.

- If making a direct connection, you'll need to plug a standard Ethernet patch cable or a crossover cable into the Ethernet port on the Mongoose and on your computer. A crossover cable is included with the Mongoose equipment.

- If connecting to the network, you can connect your computer to the same network switch to which the Mongoose is connected or connect to the network in some other way. For example, if a wireless access point is available, you may want to use it so that you can roam with a laptop and still communicate with the Mongoose. To connect to a switch, plug one end of a standard Ethernet patch cable (or crossover cable) into the Ethernet port on the Mongoose and the other end into a port on the network switch.

Generating RAD Labels

Each RAD contains an area near the top in which you can insert a custom label. We recommend that you use these labels to identify the channel associated with the corresponding jack. The following graphic illustrates the placement of the labels:
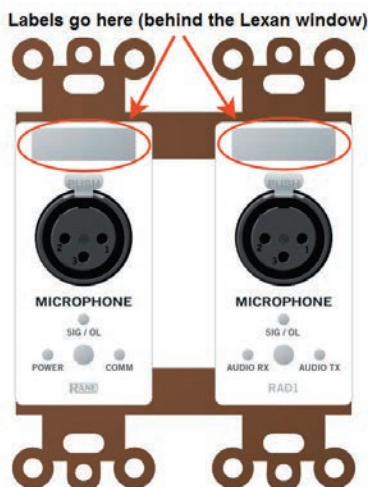
To eliminate confusion and also streamline audio routing and troubleshooting, the channel names on the physical RADs should match the channel names in the Mongoose Tracker. To help ensure this consistency, the Mongoose Tracker includes a label generation feature that produces a PDF document of labels based on the channel names you've entered in the software. We highly recommend that you use this feature to create your RAD labels.

Note: If you do not need custom labels, you can use the generic labels shipped with the RADs. If you do not need the RAD's label area at all (for example, if you plan to use custom labeled panels with your RADs), you can flip the generic label around and insert it behind the Lexan window.

To generate RAD labels:

1. Within the Mongoose Tracker, open the configuration file from which you want to generate labels. Alternatively, if you have loaded the configuration into a device, you can open the device itself.

2. Confirm that the RADs are configured appropriately. At a minimum, enter the names for the channels as this is needed for the generation of labels. To enter channel names in bulk, click the **Rename Channels** button in the audio routing matrix area: `Rename Channels` In the window that appears, type the RAD and CobraNet channel names that you want.

3. In the toolbar, select the **Labels** icon:

    The Create RAD Labels dialog box displays:
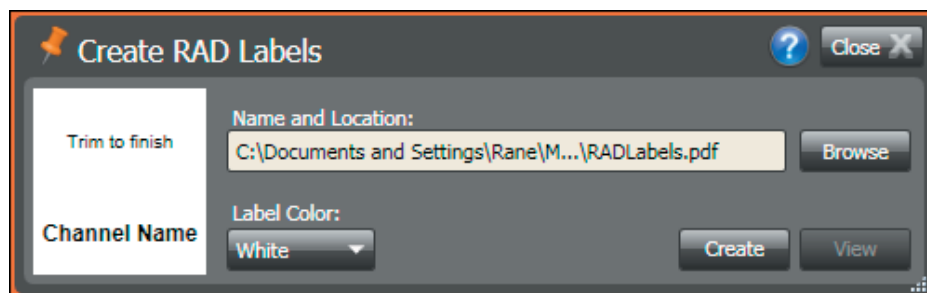
4. In **Name and Location**, browse for or type the location and file name you want for the PDF file you are generating. If you type the name of a folder that does not exist, the software will create it for you. By default, the file is named `RADLabels.pdf` and is placed in `My Documents\Mongoose Tracker\RAD Labels`.

5. In **Label Color**, select the color you want your labels to be (to match the Decora plates you will be using). The choices are white (with black text), black (with white text), and ivory (with black text).

6. Click **Create**. Mongoose Tracker generates the PDF file and, once it is complete, displays a confirmation message and enables the **View** button.

7. Click **View** to open the file.

8. When you are satisfied with the results, print the PDF file. The best fit is with paper of no more than 24 lb weight (90g/m^2) or caliper thickness no more than 5 mils (0.127 mm).

9. Cut out the labels and insert them behind the Lexan window on the appropriate RADs. To help with the alignment of the labels, we recommend that you wait until after inserting the labels before trimming off the excess paper (using an Exacto or box knife).

Note: If you want to use different fonts or colors for the label text, you will need to create the label document yourself. To do so, download the Microsoft Word template from the Mongoose page on the Rane website. Enter the channel names, apply the appropriate fonts and/or colors, print the document, and cut and insert the labels.

Updating the Mongoose Firmware and/or the Mongoose Tracker Software

The Mongoose and the RADs contain firmware that controls the functionality of the hardware and allows communication between the hardware and the Mongoose Tracker. It is important to verify that the firmware version on your hardware is compatible with the version of Mongoose Tracker that you are using. If they are not compatible, the system will not work.

To determine if you need to update the Mongoose firmware:

1. Open the **Device Discovery** dialog box by clicking the **Discover** icon in the toolbar. If a Mongoose in the list contains firmware that is older than (or current and compatible with) the version of Mongoose Tracker you are running, the button in the **Operations** column changes to **Update Firmware**. If a Mongoose contains firmware that is newer than the version of Mongoose Tracker running, the button in the **Operations** column changes to **Roll Back Firmware.**
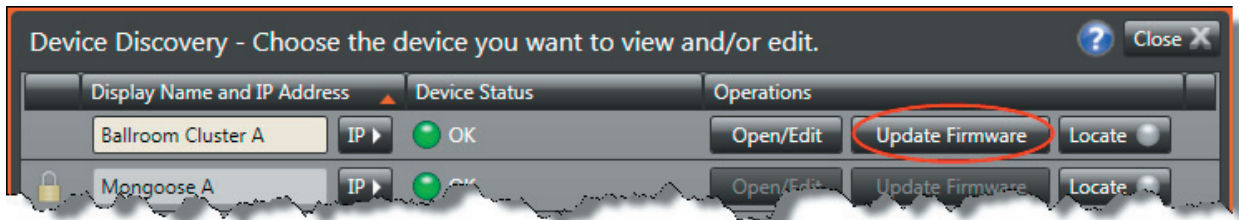
2. Click this button to perform the update. As part of the firmware update, Mongoose also updates the firmware on the attached RADs (if necessary). During a RAD firmware update, its four status indicators display a racing pattern of green lights.

   Your audio system will be down temporarily while the update occurs, so you should keep this in mind when choosing the timeframe for performing the update. The process is quick - no more than a few minutes. When the update completes, you will be prompted to power cycle the Mongoose.

   Note: The **Update Firmware** button is enabled even if the firmware and software versions are current and compatible. This makes it possible for you to reapply the firmware, if necessary.

CAUTION:

- Avoid disrupting power to the Mongoose device during the firmware update process. In some instances the firmware update process will modify critical sections of the firmware. Disruption of power during this critical update could potentially render the unit unusable and can only be fixed by returning the unit to the Rane Factory. You will be notified via dialog before a critical update, so be certain you have uninterrupted power before proceeding with the firmware update.

- Although Mongoose Tracker provides the ability to roll back the firmware to a previous version, this practice is highly discouraged. Not only will you lose the configuration data on the Mongoose, some of your RAD models may not be supported by the previous firmware version and would need to be removed from the system. For this reason, we strongly recommend that you update your software instead of rolling back your firmware. If you decide to roll back, you should make a backup file of your Mongoose configuration before proceeding - just in case you need it later.

To determine if you need to update your Mongoose Tracker software, do one of the following:

- By default, when Mongoose Tracker starts, it checks for the availability of updates to the software (if an Internet connection is present). If an update is available, Mongoose Tracker displays a link you can use to launch the update. You can disable this functionality (checking for updates on startup) within the **Application Settings** dialog box.
- You can request an immediate update check at any time by selecting Check for Updates on the Help menu.
- Open the **Device Discovery** dialog box by clicking the Discover icon in the toolbar. If a Mongoose in the list contains firmware that is newer than the version of Mongoose Tracker you are running, the **Device Status** column for that Mongoose contains a link that says **Requires newer software**. Click this link to download the latest version of the software.

Uninstalling the Software

You can either use standard Windows application removal procedures for uninstalling Mongoose Tracker or you can run the Mongoose installation application and choose the **Uninstall** option (on the Welcome screen).

Note that when you initially installed Mongoose Tracker, the following components were also installed (if they were not already present on the computer):

- Bonjour - needed for Zero Configuration Networking (in other words, for discovery of Mongoose devices on the network).
- Microsoft .NET Framework 3.5 - needed for running the Mongoose Tracker.

When you uninstall Mongoose Tracker, you may also want to uninstall these other two components. Other applications may need these components, however. If you are uncertain, we recommend that you leave them in place.

TROUBLESHOOTING

This section provides troubleshooting tips for specific situations. In each subsection are tables that list potential problems paired with possible causes and proposed action.

Troubleshooting the Mongoose Hardware

Problem	Possible Causes	Suggested Action
Power light doesn't come on when the device is plugged in	Power outlet or power strip isn't working.	Try a different outlet or power strip.
	Mongoose power cord is malfunctioning.	Replace the Mongoose power cord.
Ethernet Link LED indicators do not come on after plugging the Mongoose into a network switch or connecting it directly to a computer.	Mongoose and/or network switch isn't powered on.	Power on both devices.
	Patch cable or crossover cable is broken.	Try a different cable.
	The port on the network switch isn't working.	Try plugging the cable into a different port on the network switch.
CobraNet Link LED indicators do not come on after plugging the Mongoose into a network switch or connecting it directly to another CobraNet device.	Mongoose and/or network switch isn't powered on.	Power on both devices.
	Patch cable is broken.	Try a different patch cable.
	You used a crossover cable to connect the CobraNet port to a network switch that does not have Auto-MDIX capability.	Remove the crossover cable and replace it with a standard Ethernet patch cable.
	The port on the network switch isn't working.	Try plugging the cable into a different port on the network switch.
	You did not use a crossover cable when connecting the Mongoose directly to another CobraNet device.	Replace the cable with a crossover cable.

Displayed on the rear panel of the Mongoose are four status indicators for each connected RAD. If the Mongoose is communicating properly with a RAD, all four status indicators (**Audio Rx**, **Audio Tx**, **Comm**, and **Power**) should be on. The following table details possible causes and solutions for situations in which one or more of these indicators are off.

Note: It is best to check these indicators in the following order: **Power**, **Comm**, **Audio Tx**, and **Audio Rx**. If the power isn't working, nothing else will work. If the data communications (**Comm**) isn't working, **Audio Rx** will not work. If **Audio Tx** isn't working, **Audio Rx** will not work.

Mongoose rear panel RAD status				Possible Causes	Suggested Action
Power	Comm	Audio Tx	Audio Rx		
Off	Off	Off	Off	The Mongoose is not powered.	Power on the Mongoose and wait for it to boot up.
				A miswired cable is loading down the RAD power supply.	Use a cable tester to verify the wiring of the CAT 5 cable.
					If using a punch block, verify that the brown pair is properly punched. (Assuming T568B termination).
				The cable is plugged into something other than a RAD.	Plugging the RAD cable into some other device (like an Ethernet switch) may load down the RAD power supply causing the error.
				The power supply on that RAD port is broken.	Return the unit for service.
On	Off	On/Off	Off	The twisted pair in the CAT 5 cable that carries communications data is miswired or broken.	Use a cable tester to verify the wiring of the CAT 5 cable.
					If using a punch block, verify that the orange pair is properly punched. (Assuming T568B termination).
On	On	On/Off	Off	The RAD is not receiving an audio stream from the Mongoose.	Use a cable tester to verify the wiring of the CAT 5 cable.
					If using a punch block, verify that the green pair is properly punched. (Assuming T568B termination).
On	On	Off	On/Off	The Mongoose is not receiving an audio stream from the RAD.	Use a cable tester to verify the wiring of the CAT 5 cable.
					If using a punch block, verify that the blue pair is properly punched. (Assuming T568B termination).

Troubleshooting the RAD Devices

If a RAD is functioning properly and communicating with the Mongoose, all four of its status indicators (**Power**, **Comm**, **Audio Rx**, and **Audio Tx**) will be green. The following table details possible causes and solutions if one or more of these indicators are off or red. If you detect a problem with a RAD, we recommend first checking the Mongoose to determine if the problem is originating there.

Note: It is best to check these indicators in the following order: **Power**, **Comm**, **Audio Rx**, and **Audio Tx**. If the power isn't working, nothing else will work. If the data communications (**Comm**) isn't working, **Audio Tx** will not work. If **Audio Rx** isn't working, **Audio Tx** will not work.

RAD status indicators				Possible Causes	Suggested Action
Power	Comm	Audio Rx	Audio Tx		
Off	Off	Off	Off	Room is dark and LEDs are off.	Shine a light on the RAD front panel.
				The Mongoose is not powered.	Power on the Mongoose.
				A miswired or broken cable is disrupting power to the RAD.	Use a cable tester to verify CAT 5 termination.
					If using a punch block, verify that the brown pair is properly punched. (Assuming T568B termination).
				The cable is not plugged into a Mongoose.	Plugging the RAD cable into some other device (like an Ethernet switch) will not supply power to the RAD.
Red	Green or Red	Green or Red	Green or Red	There is excessive voltage drop between the Mongoose and RAD.	Verify it is 24 AWG (or heavier) cable.
					Verify the cable length from Mongoose to RAD has not exceeded 150 meters.
Green	Red	Green or Red	Red	The twisted pair in the CAT 5 cable that carries communications data is miswired or broken.	Use a cable tester to verify CAT 5 termination.
					If using a punch block, verify that the orange pair is properly punched. (Assuming T568B termination).
Green	Green	Red	Green or Red	The RAD is not receiving an audio stream from the Mongoose.	Use a cable tester to verify CAT 5 termination.
					If using a punch block, verify that the green pair is properly punched. (Assuming T568B termination).
Green	Green	Green or Red	Red	The Mongoose is not receiving an audio stream from the RAD.	Use a cable tester to verify CAT 5 termination.
					If using a punch block, verify that the blue pair is properly punched. (Assuming T568B termination).
Flashing Red	Flashing Red	Flashing Red	Flashing Red	The RAD model attached to this port does not match the model specified in the Mongoose configuration.	Replace the RAD with the correct model.
					Change the Mongoose configuration to specify the connected RAD.
Flashing Green	Flashing Green	Flashing Green	Flashing Green	The RAD is in Locate mode.	End Locate mode for that RAD from within the Mongoose Tracker.

Troubleshooting the Mongoose Connection

Before troubleshooting a connection issue, it may help if you understand the basics of how Mongoose Tracker *discovers* and then establishes communications with a Mongoose. Mongoose devices send occasional UDP (Bonjour) messages. Mongoose Tracker listens constantly for these messages and, once it receives one, notifies the RaneLink application (a service installed with Mongoose Tracker that helps establish communication with Mongoose devices). RaneLink then does the following two things, if necessary: It sets up a temporary link-local IP address (in other words, it is cleared when the computer reboots) on the appropriate network interface card (NIC). It also adds an entry to the computer's network route table. This entry tells Windows and Mongoose Tracker which NIC to use for communicating with the Mongoose.

Mongoose Tracker displays in its **Device Discovery** dialog box all Mongoose devices it detects, whether or not it is able to connect to the device. If Mongoose Tracker detects a device but is unable to establish communications, a button appears labeled **Troubleshoot Connectivity**.

Click this button to display a list of suggestions for resolving your connectivity issue. For your convenience, the same list of suggestions is presented below (in order of priority):

1. **Give Mongoose Tracker more time to establish the connection.**
   It can sometimes take up to two minutes for Mongoose Tracker to establish the network settings and communications it needs (within Windows) to connect to the Mongoose. During this time, Mongoose Tracker may be waiting for DHCP server detection, Windows' networking timeouts, or simply trying to complete its negotiation with the Mongoose device. When you first power up a Mongoose, it's internal power-up routine can take a long time to complete. So the first troubleshooting tip? Patience!

2. **Add Mongoose Tracker and the RaneLink service to your firewall exceptions list**
   If you've practiced patience and it hasn't paid off, it's time to try something else. The most common culprit at this point is your firewall (either the Windows firewall or a third-party firewall). It may be preventing communications. To avoid this problem, add the Mongoose Tracker and the RaneLink service (a service needed by Mongoose Tracker to establish a connection) to the firewall's exceptions list. The file names are Mongoose Tracker.exe and RaneLink.exe and they are both located in the Mongoose Tracker installation folder. The default location is listed below:
   C:\Program Files\Rane Corporation\Mongoose Tracker\Mongoose Tracker.exe

   C:\Program Files\Rane Corporation\Mongoose Tracker\RaneLink.exe

   Note: You may need to reboot your computer after adding these files to the exceptions list.

3. **Ask your IT department for some assistance.**
   If your computer is administered by an IT department, you may need their help. Refer them to the following two topics in the Mongoose Tracker Help system: *Administrative Rights Requirements* and *Ethernet Communications Between Mongoose Tracker and Mongoose.* Perhaps you *are* the IT department. In that case, these IT topics are meant for you!

4. **Verify that the Mongoose device is operating properly.**
- Has the Mongoose completed its power-up cycle? You'll know it is finished when its LED indicators stabilize (instead of racing across the device's front panel).
- Is the Mongoose Ethernet connection functioning properly? If it is, the Ethernet LINK indicator on the front panel displays a solid green light. If this light is flashing or off, there is likely a problem with the connection. Possible culprits are the Ethernet cable or the network switch.
- Is anything able to communicate successfully with the Mongoose? Check the LAN indicator on the rear panel of the Mongoose. Is it flashing? If so, you know that something on the network is able to communicate with the Mongoose. That something could be the Mongoose Tracker, the DHCP server, or some other device on the network.

5. **Verify that the necessary communications services are running.**
Mongoose Tracker employs two communications services that help control the connectivity with the Mongoose devices on the network: RaneLink and Bonjour
- RaneLink, a communications application created by Rane that runs in the background, aids Mongoose Tracker in locating and connecting to Mongoose devices on the network. To determine if it is running, check for its existence and status in your computer's Services list, as described below:

    Windows XP: Click Start, click Control Panel, double-click Administrative Tools, and then double-click Services. Look for RaneLink in the list of services (you can sort the list by service name) and verify that its status is Started.

    Windows Vista: Open Task Manager by either right-clicking an empty area on the taskbar or by pressing CTRL-SHIFT-ESC. Click the Services tab. Look for RaneLink in the list of services (you can sort the list by service name) and verify that its status is Running.

    If RaneLink is not present or not running, try rebooting your computer, and then checking its status again.
- Apple's Bonjour for Windows, a third-party communications application that runs in the background, helps facilitate zero configuration networking. To determine if it is running, check for its existence and status in your computer's Services list, as described above. Look for Bonjour Service in the list of services.

    If Bonjour is not present or not running, try rebooting your computer and restarting Mongoose Tracker, and then check its status again.

If one or both of these services fails to start after rebooting and restarting Mongoose Tracker, it's time to call Rane Technical Support. If you are familiar with the Windows Event Viewer, viewing any messages related to RaneLink or Bonjour may shed some light on the problem. However, we highly recommend calling Rane for assistance.

6. **Verify that the computer's link-local IP address intended for use by the Mongoose is on the network interface card (NIC) controlling the connection to the Mongoose.**
   Mongoose Tracker establishes a link-local IP address for use in establishing communications with the Mongoose. Because most computers contain multiple NICs, it is possible that the link-local address has been assigned to the wrong NIC or assigned to the wrong route table. You can determine if this problem exists by following the procedures below:

- To determine if the link-local IP address has been assigned to the proper NIC:
   Windows XP: Click Start, click Control Panel, double-click Network Connections, click the network connection on which the Mongoose resides, and then view the settings for this NIC in the Details box displayed in the lower left corner. Verify that the first two numbers of one of the IP addresses are 169.254. The second two numbers can be anything between 0 and 255.
   Windows Vista: Click Start, click Control Panel, in Network and Internet click View network status and tasks, click the View status link associated with the connection on which the Mongoose resides, and then click the Details button in the dialog box that displays. Verify that the first two numbers of one of the IP addresses are 169.254. The second two numbers can be anything between 0 and 255.

- To determine if the link-local IP address has been assigned to the wrong route table:
   Open a DOS command box (Click Start, click Run, type cmd, click OK). At the DOS prompt, type route print. The route displays. Scan the list of IP addresses, looking for one or more that begin with 169.254. Verify that they are assigned to the proper NIC.
   If the IP address has been assigned to the wrong NIC or route table, or if you do not see the address at all, please contact Rane Technical Support.

7. **Ping the Mongoose.**
   Try issuing a ping command (from a DOS command box) to the Mongoose device. To do this, you need to know the Mongoose IP address, which you can view by opening the Device Discovery dialog and clicking the IP box next to the appropriate device. If you cannot successfully ping the Mongoose, try power cycling it and then restarting the Mongoose Tracker application.
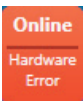
8. **If none of these troubleshooting options solves the problem, contact Rane Technical Support.**

Troubleshooting the RAD Port status in the RAD Settings dialogs

Color / Text	Meaning	Recommended Action
Port 1 OK — OK	The configuration matches the physical RAD as detected on the port with no errors detected.	No action needed.
Port 1 Updating Firmware — Firmware Update In Progress	The Mongoose is in the process of updating the RAD's firmware.	No action needed. Once the firmware update is complete, the Mongoose will establish communication with the RAD and update the status.
Port 1 Model Mismatch — RAD Model Mismatch	The physical RAD model connected to this port does not match the RAD model specified in the Mongoose configuration. Note: As previously discussed, you can also view the RAD hardware to determine if there is a model mismatch. If a mismatch occurs, the bottom four LED indicators on the RAD flash red.	Doublecheck that you installed the correct RAD model and connected it to the correct port on the Mongoose. If you installed the wrong RAD model, install the correct model. If you installed the correct RAD model but connected it to the wrong port, you can either connect it to the correct port or you can use the software to swap the port configurations. See *Swapping RAD Ports* on page 34 for details. If you installed the correct RAD and connected it to the correct port, the mistake may be in the configuration file that was loaded. Verify that you loaded the right file. You should also check with the audio designer who created the configuration file or, if you created the file, doublecheck the file's contents.
Port 1 Hardware Error — Communication Error	The Mongoose cannot communicate with the RAD even though it is physically attached to the Mongoose.	The twisted pair in the CAT 5 cable that carries communication data could be miswired or broken. Verify the CAT 5 cable is correctly terminated or if using a punch block, verify that the orange pair is properly punched (assuming T568B termination).
Port 1 Hardware Error — Mongoose Port Power Error	The power level on the Mongoose RAD port is below the allowed threshold for 'good power'.	The twisted pair in the CAT 5 cable that carries power could be miswired or broken. Verify the CAT 5 cable is correctly terminated, or if using a punch block, verify that the brown pair is properly punched (assuming T568B termination). The RAD cable could be plugged into a non-RAD device. Unplug the cable on the Mongoose and see if the error goes away. If yes, plug the cable back into the Mongoose and unplug at the RAD end. If the error goes away again you likely have a broken RAD. Return the RAD for service. The power supply on that Mongoose RAD port is broken. Try another port to verify. Return the Mongoose for service.
Port 1 Hardware Error — Power is Low	The power level at the RAD is below the allowed threshold of 'good power'.	The most common cause for this error is cable runs that exceed the maximum of 150 meters (500 feet). Verify the cable length is less than maximum allowed distance. The twisted pair in the CAT 5 cable that carries power could be miswired or broken. Verify the CAT 5 cable is correctly terminated or if using a punch block, verify the brown pair is properly punched (assuming T568B termination).

Color / Text	Meaning	Recommended Action
Audio Rx Error	The RAD is reporting that it does not sense an Audio lock from the Mongoose.	This error can occur when there is a communication error. If there is a communication error, fix that before investigating an Audio Rx error. The twisted pair in the CAT 5 cable that receives Audio at the RAD from the Mongoose could be miswired or broken. Verify the CAT 5 cable is correctly terminated or if using a punch block, verify that the green pair is properly punched (assuming T568B termination).
Audio Tx Error	The Mongoose does not sense an Audio lock from the RAD.	The twisted pair in the CAT 5 cable that transmits Audio from the RAD to the Mongoose could be miswired or broken. Verify the CAT 5 cable is correctly terminated or if using a punch block, verify that the blue pair is properly punched (assuming T568B termination).

Troubleshooting the Mongoose status in the Mongoose Settings dialog

Color / Text	Meaning	Recommended Action
OK	The Mongoose is operating normally without errors.	No action needed.
RAD Firmware Updating	One or more RADs are reporting that they are in the process of updating their firmware.	No action needed. Once the RAD firmware update is complete the mongoose will establish communication with the RAD and update the individual RAD status.
RAD Model Mismatch	The physical RAD model connected to this port does not match the RAD model specified in the Mongoose configuration.	Check the status on the individual RADs to determine which have a model mismatch. See the previous table on RAD Status for suggestions on troubleshooting individual RAD mismatches.
Configuration Corrupted	The Mongoose could not find or load the configuration file.	The configuration stored on the Mongoose device is corrupted or missing and needs to be reloaded. Create a configuration and apply it to the device before attempting to open the device.
RAD Communication Error	The Mongoose cannot communicate with one or more RADs even though they are physically attached to the Mongoose.	Check the status on the individual RADs to determine which have a communication error. See the previous table on RAD Status for suggestions on troubleshooting individual RAD communication errors.

Color / Text	Meaning	Recommended Action
Online Hardware Error Mongoose Port Power Failure	The Mongoose has detected that the power level on one or more ports is below the allowed threshold for 'good power'.	Check the status on the individual RADs to determine which Mongoose ports are experiencing a power failure. See the previous table on RAD Status for suggestions on troubleshooting individual Mongoose port power failures.
Online Hardware Error RAD Power Error	One or more RADs are reporting that their power level is below the allowed threshold of 'good power'	Check the status on the individual RADs to determine which have a power error. See the previous section on RAD Status for suggestions on troubleshooting individual RAD power errors.
Online Hardware Error RAD Audio Rx Error	One or more RADs are reporting that they do not sense an Audio lock from the Mongoose.	Check the status on the individual RADs to determine which have an Audio Rx error. See the previous section on RAD Status for suggestions on troubleshooting individual RAD Audio Rx errors.
Online Hardware Error RAD Audio Tx Error	The Mongoose does not sense an Audio lock from one or more RADs.	Check the status on the individual RADs to determine which have an Audio Tx error. See the previous section on RAD Status for suggestions on troubleshooting individual RAD Audio Tx errors.
Online Hardware Error Hardware Error	An unknown internal error has occurred in the Mongoose device.	Power cycling the Mongoose and restarting the Mongoose Tracker may resolve this issue.

Index

FACTORY AUTHORIZED SERVICE

Your unit may someday need to be serviced by the Rane Factory if you live in the USA. International customers should contact your dealer or distributor for service. You must call the Rane factory before shipping. Please do not return your unit to Rane without prior authorization.

Rane Corporation

To obtain service or a Return Authorization in the USA, please phone 425-355-6000

or Fax 425-347-7757

LIMITED DOMESTIC WARRANTY

RANE CORPORATION WARRANTS ALL RANE PRODUCTS (EXCEPT THOSE ITEMS CLASSIFIED AS *WEAR PARTS*, AND LISTED ON THE MANUAL-1 PAGE OF EACH OPERATORS MANUAL) PURCHASED IN THE U.S. AGAINST DEFECTS IN MATERIAL OR WORKMANSHIP FOR A PERIOD OF TWO (2) YEARS. *WEAR PARTS* ARE LIMITED TO A PERIOD OF NINETY (90) DAYS FROM THE INITIAL DATE OF RETAIL PURCHASE FROM AN AUTHORIZED RANE DEALER—WEAR PARTS REQUIRE PROOF OF PURCHASE DATE. This limited warranty extends to all purchasers or owners of the product during the warranty period beginning with the original retail purchase. Rane Corporation does not, however, warrant its products against any and all defects: 1) arising out of material or workmanship not provided or furnished by Rane, or 2) resulting from abnormal use of the product or use in violation of instructions, or 3) in products repaired or serviced by other than the Rane Factory, or 4) in products with removed or defaced serial numbers, or 5) in components or parts or products expressly warranted by another manufacturer. Rane agrees to supply all parts and labor to repair or replace defects covered by this limited warranty with parts or products of original or improved design, at its option in each respect, if the defective product is shipped prior to the end of the warranty period to the Rane Factory in the original packaging or a replacement supplied by Rane, with all transportation costs and full insurance paid each way by the purchaser or owner.

LIMITED WARRANTY OUTSIDE THE U.S.A.
RANE PRODUCTS ARE WARRANTED ONLY IN THE COUNTRY WHERE PURCHASED, THROUGH THE AUTHORIZED RANE DISTRIBUTOR IN THAT COUNTRY, AGAINST DEFECTS IN MATERIAL OR WORKMANSHIP, THE SPECIFIC PERIOD OF THIS LIMITED WARRANTY SHALL BE THAT WHICH IS DESCRIBED TO THE ORIGINAL RETAIL PURCHASER BY THE AUTHORIZED RANE DEALER OR DISTRIBUTOR AT THE TIME OF PURCHASE. Rane Corporation does not, however, warrant its products against any and all defects: 1) arising out of materials or workmanship not provided or furnished by Rane, or 2) resulting from abnormal use of the product or use in violation of instructions, or 3) in products repaired or serviced by other than authorized Rane repair facilities, or 4) in products with removed or defaced serial numbers, or 5) in components or parts or products expressly warranted by another manufacturer. Rane agrees, through the applicable authorized distributor, to repair or replace defects covered by this limited warranty with parts or products of original or improved design, at its option in each respect, if the defective product is shipped prior to the end of the warranty period to the designated authorized Rane warranty repair facility in the country where purchased, or to the Rane factory in the U.S., in the original packaging or a replacement supplied by Rane, with all transportation costs and full insurance paid each way by the purchaser or owner.

ALL REMEDIES AND THE MEASURE OF DAMAGES ARE LIMITED TO THE ABOVE SERVICES, IT IS POSSIBLE THAT ECONOMIC LOSS OR INJURY TO PERSON OR PROPERTY MAY RESULT FROM THE FAILURE OF THE PRODUCT; HOWEVER, EVEN IF RANE HAS BEEN ADVISED OF THIS POSSIBILITY, THIS LIMITED WARRANTY DOES NOT COVER ANY SUCH CONSEQUENTIAL OR INCIDENTAL DAMAGES. SOME STATES OR COUNTRIES DO NOT ALLOW THE LIMITATIONS OR EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, ARISING BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE, OR OTHERWISE, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED TO A PERIOD OF TWO (2) YEARS FROM EITHER THE DATE OF ORIGINAL RETAIL PURCHASE OR, IN THE EVENT NO PROOF OF PURCHASE DATE IS AVAILABLE, THE DATE OF MANUFACTURE, SOME STATES OR COUNTRIES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE, COUNTRY TO COUNTRY.

WARRANTY PROCEDURE - Valid in USA only

NOTICE! You must complete and return the warranty card or register your product online to extend the Warranty from 2 years to 3 years!

TO VALIDATE YOUR EXTENDED WARRANTY: Use the postcard that came in the box with your unit, or go to *www.rane.com* and click on **New Product Registration**. Fill out the warranty completely, being sure to include the model and serial number of the unit since this is how warranties are tracked. If your Rane product was purchased in the U.S.A., mail the completed card or register online with to Rane Corporation within 10 days from the date of purchase. **If you purchased the product outside the U.S.A. you must file your warranty registration with the Rane Distributor in that country.** It is advised that you keep your bill of sale as proof of purchase, should any difficulties arise concerning the registration of the warranty card. **NOTICE:** IT IS NOT NECESSARY TO REGISTER IN ORDER TO RECEIVE RANE CORPORATION'S STANDARD TWO YEAR LIMITED WARRANTY.

WARRANTY REGISTRATION is made and tracked by MODEL AND SERIAL NUMBERS ONLY, not by the purchaser's or owner's name. Therefore any warranty correspondence or inquires MUST include the model and serial number of the product in question. Be sure to fill in the model and serial number in the space provided below and keep this in a safe place for future reference.

WARRANTY SERVICE MUST BE PERFORMED ONLY BY AN AUTHORIZED RANE SERVICE FACILITY LOCATED IN THE COUNTRY WHERE THE UNIT WAS PURCHASED, OR (if product was purchased in the U.S.) AT THE RANE FACTORY IN THE U.S.. If the product is being sent to Rane for repair, please call the factory for a Return Authorization number. We recommend advance notice be given to the repair facility to avoid possible needless shipment in case the problem can be solved over the phone. UNAUTHORIZED SERVICE PERFORMED ON ANY RANE PRODUCT WILL VOID ITS EXISTING FACTORY WARRANTY.

FACTORY SERVICE: If you wish your Rane product to be serviced at the factory, it must be shipped FULLY INSURED, IN THE ORIGINAL PACKING OR EQUIVALENT. This warranty will NOT cover repairs on products damaged through improper packaging. If possible, avoid sending products through the mail. Be sure to include in the package:

1. Complete return street shipping address (P.O. Box numbers are NOT acceptable).

2. A detailed description of any problems experienced, including the make and model numbers of any other system equipment.

3. Remote power supply, if applicable.

Repaired products purchased in the U.S. will be returned prepaid freight via the same method they were sent to Rane. Products purchased in the U.S., but sent to the factory from outside the U.S. MUST include return freight funds, and the sender is fully responsible for all customs procedures, duties, tariffs and deposits.

In order to qualify for Rane's one year extended warranty (for a total of 3 years parts and labor), the warranty must be completely filled out and sent to us immediately. Valid in USA only.

We recommend you write your serial number here in your owners manual and on your sales receipt for your records.

SERIAL NUMBER:_____**PURCHASE DATE:**_____

Declaration of Conformity

**Application of
Council directive(s):**
2006/95/EC
2004/108/EC
2002/96/EC
2002/95/EC

**Standard(s) to which
conformity is declared:**
EN60065: Ed. 7.1 (2005)
EN55103-1:1996
EN55103-2:1996
ENVIRONMENT E2
Serial Numbers 600000-700000

Manufacturer:
Rane Corporation
10802 47th Avenue West
Mukilteo WA 98275-5098 USA

This equipment has been tested and found to be in compliance with all applicable standards and regulations applying to the EU's Low Voltage (LV) directive 2006/95/EC, and Electromagnetic Compatibility (EMC) directive 2004/108/EC. In order for the customer to maintain compliance with this regulation, high quality shielded cable must be used for interconnection to other equipment. Modification of the equipment, other than that expressly outlined by the manufacturer, is not allowed under this directive. The user of this equipment shall accept full responsibility for compliance with the LV directive and EMC directive in the event that the equipment is modified without written consent of the manufacturer.

Type of Equipment:
Professional Audio Signal Processing

Models:
MONGOOSE

Immunity Results:
No susceptibilities observed.

*I, the undersigned, hereby declare that the equipment specified above conforms
to the Directive(s) and Standard(s) shown above.*

_____
(Signature)

Doug Bruey
_____
(Full Name)

Compliance Engineer
_____
(Position)

May 1, 2008
_____
(Date)

Mukilteo WA USA
_____
(Place)