FrontRow ezRoom Project Management

Introduction

ezRoom is a complete AV control and audio reinforcement system designed to be both flexible and easy to use. For the best installation experience, we strongly recommend you follow the guidelines here to avoid multiple trips to the installation site for your team, and for a positive experience for the customer.

Read this guide *first* as an overview, then drill down to individual installation guides as needed for specific projects and configurations.

The Wrong Way

The wrong way to install an ezRoom is to show up at the site with no computer, no internet access, and no pre-configuring done on the devices. With no access to installer guide and configuration files and no IP addresses ready, this installation will cost more for the integrator, reducing profit.

The Right Way

The proper way to prepare for an ezRoom installation *prior* to showing up at the site is to do the following:

1. Configure all devices using the guidance in this document:

   a) Get a list of IP addresses from the school to be used for the ezRoom equipment. The school will be reserving these IP addresses on their network.

   b) Download a [template configuration (project) file](#) for the control panel from the FrontRow website and modify it as necessary for the desired installation, including updating the commands for the target projector. If possible, test the configuration with the projector prior to the installation.

   c) Update each ezRoom component (CB6000, CB2000, CM3000, etc) with the appropriate IP address and configuration file. Make sure the devices are labeled in some way so the installers know which device goes in which room.

2. Create a design plan:

   a) Before your ezRoom order was placed, you should have scoped the rooms where ezRoom will be installed to get a sense for placement, cable lengths needed, and any other installation challenges. If designing a ceiling installation be sure to note whether the ceiling space is a plenum space or not as this may affect the cabling used. Ensure you have all necessary equipment to meet local codes (support cables, etc).

   b) Using this information, use a program like Visio, Illustrator, or Sketchup, to create a wiring and placement diagram of your specific installation. There are numerous diagrams in this guide and the other installation guides, but the more specific you can be to your installation, the faster installation will proceed.

3. Download and print out the manuals needed from the [FrontRow website.](#) Make sure you have enough copies for your installers for each component you will be installing. (Or make sure the PDFs are on tablets or laptops that the installers take to the site). Also print any leave-behind materials for the teachers as needed (user guides).

At the Site

Once onsite, install, configure and test the first room until it is working *perfectly*, then document any changes to your design plan and save the configuration files in order to apply them to the remaining rooms.

If no prep work has been done by the time the installers are scheduled to be at the site, all is not lost, but the installation will take longer and may require more visits and rework. In this case, minimally, the installers will need:

1. A laptop computer,

2. internet access, and

3. the list of IP addresses and room names

. . . when they show up at the school.

It is also recommended that installers have a selection of common accessories and equipment such as wall boxes (low voltage brackets, etc), wire nuts, 2-wire conduit for extending connections if needed, double-stick tape, tie wraps, etc.

FrontRow ezRoom Installation

Overview

To install a Frontrow ezRoom you will be following these general installation steps. They do not necessarily need to be in the order below, rather this is meant as a guide for estimating installation time and effort. These steps assume that the projector is already mounted, if not then the projector installation time and effort needs to be factored in.

The general scope of work required to install the ezRoom:

- Identify the ezRoom parts, make sure you have everything that is needed.

- Apply power to the ezRoom and load the CB6000 config file, adjust the CM3000 serial port Baud rate to match the projector if necessary. *Note: If using a CB2000, follow the same instructions as you would for setting up and configuring the CB6000 except use the CB2000 or CB2050 configuration files, and of course adjust the holes you cut for the control panel accordingly. The complete CB6000 and CB2000 installation guides are also available on the web site.*

- Adjust the CB6000 and CM3000 IP addresses and network settings to those provided by the schools IT department.

- Make sure that the Macro Definition setting of the CB6000 is targeted to the IP address of the CM3000.

- Install the Encore software onto the teacher's desktop (if the computer is accessible). Install FrontRow Teacher Edition on the teacher's iPad or iPhone (if using a CB6000).

- Physical installation:

  1. Cut two dual gang holes, one for the CB6000 and one for the AV wall plates.

  2. Pull cables to their destinations.

  3. Mount the CB6000 and AV wall plates.

  4. Install the ceiling or wall speakers (see the speaker documentation for proper placement).

  5. Mount the ezRoom (typically located near the projector).

  6. Mount the IR dome sensor (near the center of the room with no line-of-site obstructions to the teachers microphone).

  7. Attach cables and plug in the ezRoom AC power cord.

  8. Test the room.

Step 1: Preparation

- Gather documents and configuration files from Frontrow tech services, make sure you have these available while installing.

- Bring a laptop with the normal installation tools and equipment.

- Have available the technical manual of the projector that will be controlled. Even if the configuration file has already been created, you will need to know the Baud rate of the projectors serial port.

- It is also useful to have the remote control of the projector available in case you need to navigate through the menus.

FrontRow ezRoom with wall-mount speakers

- Load the project configuration file into the CB6000 and make adjustments to the CM3000 as necessary.

Step 2: Configuring the Devices with Projector Specific Files

FrontRow ezRoom Configuration File Installation Procedure

This section will step you though the process of how to load a configuration file into the CB6000. The files available from FrontRow are programmed for the most common projector manufacturers. You may need to use the projector technical manual to change the commands in the project file to work properly with your projector.

CB6000

Description: Touch-screen programmable wall-mount device controller

NOTE: This procedure is to be used if neither the CB6000 nor the ezRoom enclosure has been installed in the walls or ceiling.

- Provide power to the ezRoom and connect your computer/laptop network connection to LAN1 of the CM3000. Next connect the network port (silver connector) of the CB6000 to CLAN3 of the CM3000.

- Change your computers network adapter setting to a static IP address within the range of the CB6000 and CM3000 default addresses. We suggest using **192.168.1.100** as your computer IP address. See the addendum below if you are not familiar with how to make this change.

- Open a web browser (we recommend Chrome, but others can be used) and log onto the CB6000 by entering into the browser's URL the default IP address **192.168.1.104**.

- If the log-in is successful you will see the main page of the CB6000, if not you will need to check your computer's network settings and the network cabling between the CB6000, CM3000 and your computer.

- Have the appropriate CB6000 project file available on your computer.

From the CB6000 web pages do the following:

1. **"Save/Restore"** – Browse to where the CB6000 project file is located (.cfg). Select and load the project file. This process will take about 30 seconds to complete. Once the file is successfully loaded proceed to the next step.

2. **"Macro Definition"** – Select this CB6000 tab and enter the IP address of the CM3000 in the Macro Value Field column. The CM3000 is the target destination for the CB6000 when it sends control commands. Make sure that the "**I**" remains in place at the beginning of the IP address.
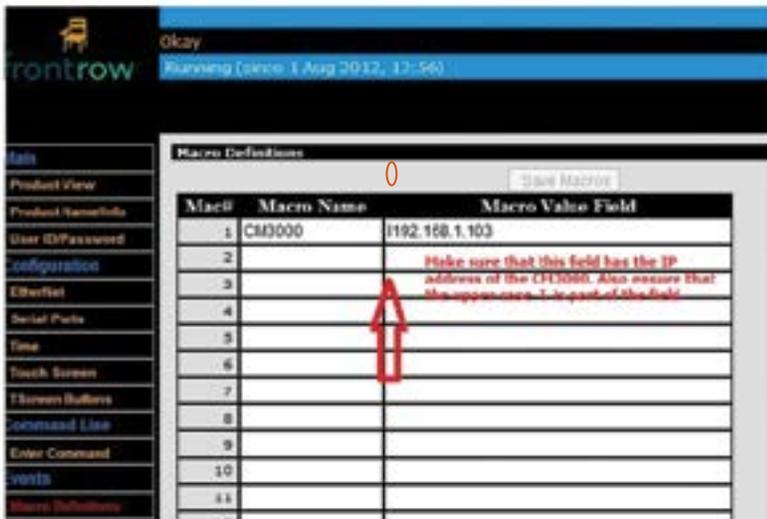
3. **"Ethernet"** – The last step is to assign the IP address and any other network settings per the room and school location.

    a. IP Address = Room address

    b. Subnet Mask = School's subnet

    c. IP Router = School's IP router address

    d. Remote Port = 7262

4. **SAVE** network settings. Your browser will display that the web site cannot be reached, that is OK as the CB6000 IP range is now different than the IP range of the laptop.

5. Next change the network settings of the CM3000 using the same procedure.

# Adjusting the CM3000 Serial Port

Introduction: When downloading the projector configuration files it is important to note that the CM3000 serial port Baud rate must be set identical to the projector that will be controlled by the CB6000.

Description: How to change the serial port (also known as com port or RS232) Baud rate to match that of the projector.

• Connect via Ethernet to the CM3000 from your computer/laptop

• Power up the CM3000 using the provided power supply

• Log onto the CM3000 using a web browser and enter the default IP address **192.168.1.103**

• If log-in is successful you will see the main page of the CM3000, if not you will need to check your computer's network settings.

• Have the appropriate projector specific Baud rate available

From the CM3000 web page do the following:

1. "Serial ports" – Select the appropriate Baud rate and then click on SAVE
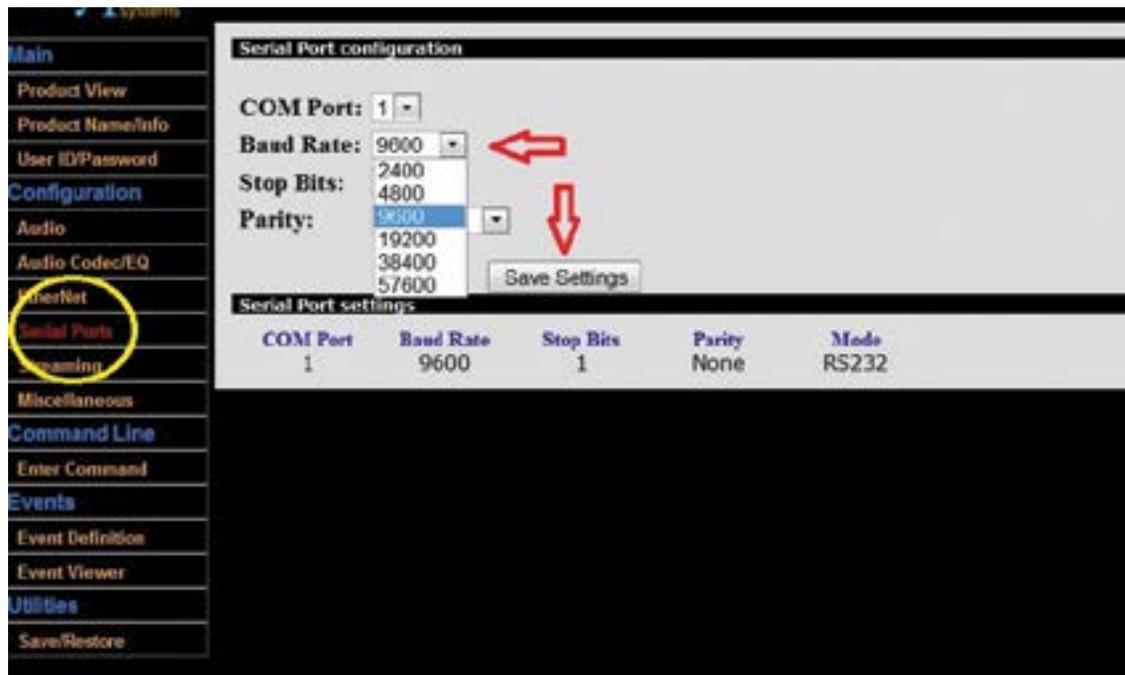
Common Projector Baud Rates

- Note that these are common defaults but are subject to change. If unsure of the Baud rate use the remote control or navigation buttons of the projector and scroll through the various menu options to find the projectors setting.

BenQ	115.2k
Epson	9600
Hitachi	19.2K
InFocus	115.2K
Mimio	19.2K
Mitsubishi	9600 *some models fixed at 115.2K*
NEC	38.4K or 19.2K (depending on model)
Panasonic	9600
Sanyo	9600 or 19.2K (depending on model)
Sharp	9600
Vivitek	9600 (models that have commands starting with Hex 7E)

Installing the Encore software:

This section will step you though the process of how to load the Encore software onto the teacher's desktop.

- Review the Encore installation guide for instructions on creating a control window that is customized for your projector.

- Create the Encore.exe to be installed on all the teachers' computers.

- Move the file to a removable USB flash drive

- Insert the USB drive into the teacher's computer (you will likely need admin rights to load a file onto the computer, or an IT representative)

- Make sure that the computer is connected to the Internet for licensing. (If you do not have internet access, you will need to call tech services for a manual license key to be entered.)

- Double click on the Encore.exe

- The software will stop just once and ask for the IP address. This is the IP address that the CM3000 is set to.

- When finished you will now see a desktop Icon labeled "Projector Control"

The Encore Desktop AV Control Software
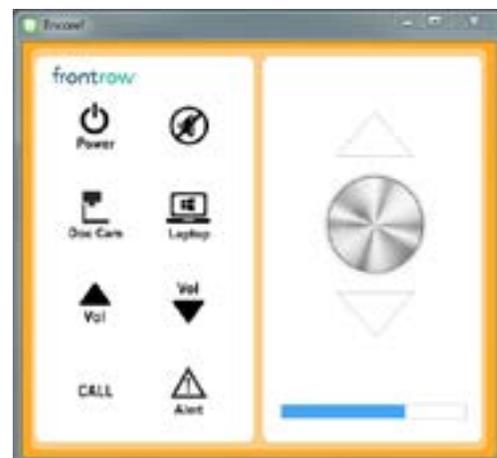
Installing the Teacher Edition for iOS software:

• Download Teacher Edition from the App Store and launch the app

• Enter the IP address of the CB6000 in the pairing dialog

Step 3: Installing the ezRoom
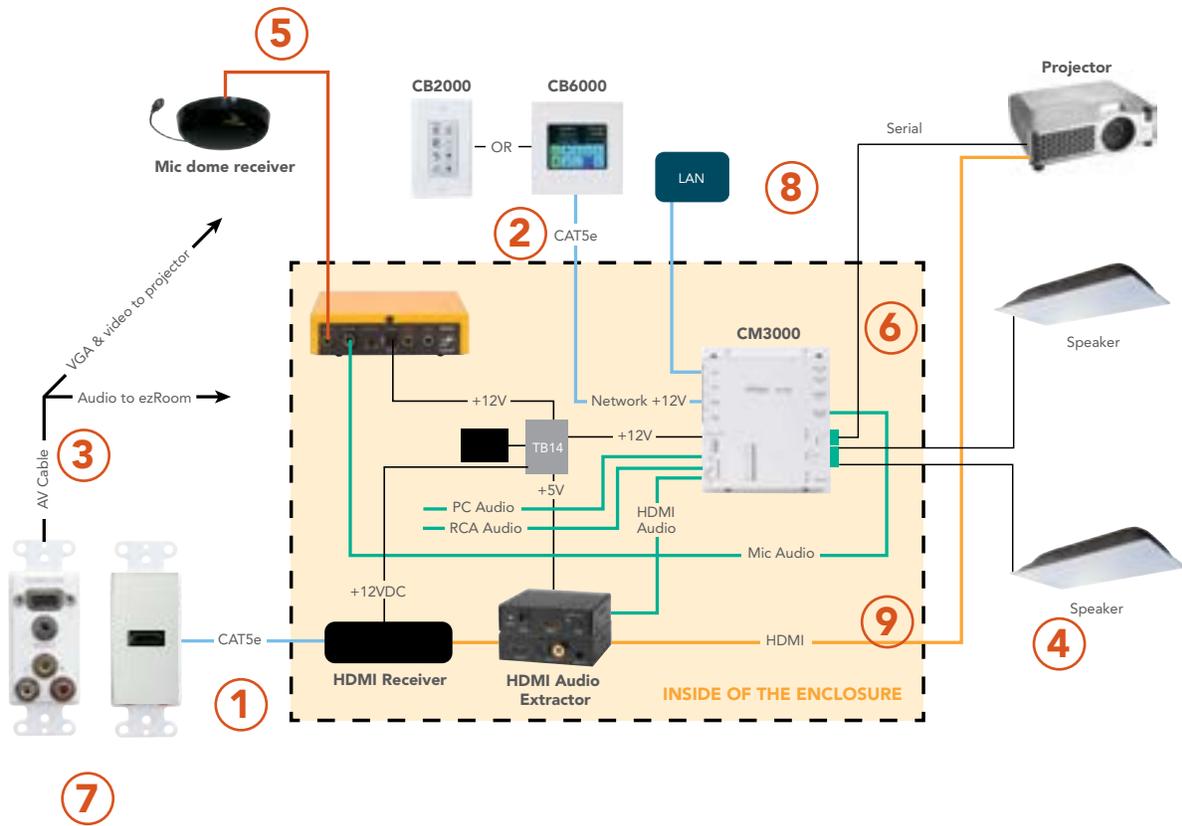
Installation procedure:

- Identify the locations for the CB6000 and the AV wall plates.

- Cut 2 dual gang holes into the walls, one for where the CB6000 will be mounted and one for the wall plates. Typically the AV wall plate is in a convenient location near the floor by the teacher's desk. The CB6000 is usually located near the teacher's desk, on a side of the white board or near the front door. Be sure to consult with the school to identify the exact locations. In the case of hard walls it may be necessary to install surface mount boxes and raceway.

The CB6000 should be mounted at a height that makes it accessible based on the ADA drawing below:
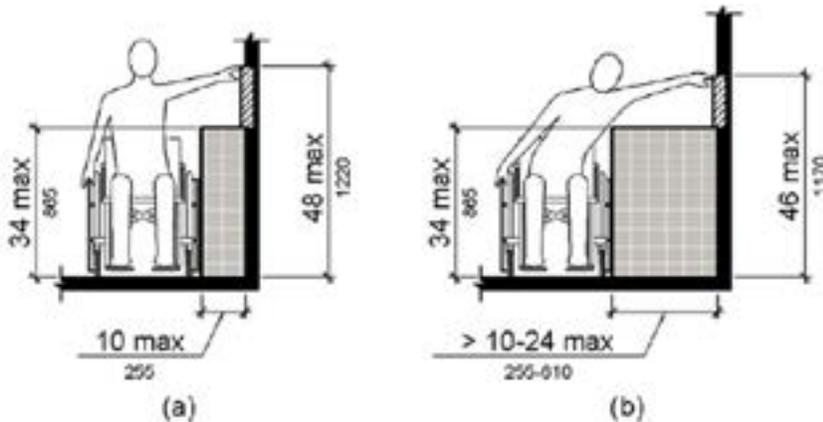
- Identify the location for the ezRoom plenum box, typically just behind the projector.
- Remove and cut the ceiling tile for the ezRoom enclosure. This enclosure is meant to sit flush with the ceiling tile in the opening that has been cut.
- Anchor the enclosure to a solid structure above the ceiling using the steel cable provided.
- Connect the AC power to the available outlet that is shared with the projector.
- Attach the microphone ceiling sensor to the best available location. Try to keep the sensor in a line of sight to wherever the teacher may be within the classroom.
- Run all necessary cables: (see numbered diagram below).
  1. 1 CAT5e from the HDMI wall plate to the enclosure, connect to the HDMI receiver.
  2. 1 CAT5e from the CB6000 silver network connector to the enclosure, connect to CLAN3 or CLAN4 of the CM3000.
  3. 1 AV multi-conductor cable from the analog wall plate to the enclosure and projector (see diagram), VGA and Video travel to the projector while the audio cables travel to the CM3000.
  4. 4 speakers wires from the CM3000 within the enclosure to the speakers.
  5. 1 Microphone sensor cable from the IR dome to the Symbio receiver sensor connection 1,2 or 3.
  6. Serial cable from the CM3000 within the enclosure to the projector.
  7. AV cables from the teacher's location and other source location to the wall plates.
  8. Connect the schools LAN cable to LAN1 or LAN2 of the CM3000 (note that there may be some installations where that is not possible. The grant room will work with the exception of the Encore software and the ability to remotely log into the devices).
  9. Connect the HDMI cable from the HDMI audio extractor inside of the ezRoom to the HDMI input of the projector.

Typical ezRoom Wiring

Mic dome receiver

CB2000

CB6000

— OR —

LAN

Projector

Serial

⑤

② CAT5e

⑧

⑥

Speaker

VGA & video to projector

Audio to ezRoom

AV Cable

③

Network +12V

CM3000

+12V

+12V

TB14

+5V

PC Audio

RCA Audio

HDMI
Audio

Mic Audio

Speaker

④

CAT5e

+12VDC

①

HDMI Receiver

HDMI Audio
Extractor

HDMI

INSIDE OF THE ENCLOSURE

⑨

⑦

Step 4: Testing the ezRoom

CB6000 Main Page

CB6000 Page 2

CB2000 Default Setup

CB2050 Default Setup

- Turn the projector ON from the CB6000.

- Switch to each input and make sure that the projector switches properly.

- Insert an audio source into the wall plates and ensure that the audio is heard and follow the appropriate projector inputs.

  - **HDMI** – audio heard will be from the HDMI source (CM3000 input 3).

  - **PC** – audio heard will be from the Decora VGA + Audio insert (CM3000 input 1).

  - **Video** – audio heard will be from the RED/WHITE RCA connectors on the Decora RCA insert (CM3000 input 2).

- Turn the projector OFF from the CB6000.

- Raise and lower the volume.

- Test the MUTE button to ensure that the audio mutes. Pressing the mute button toggles the mute ON/OFF. Also raising and lowering the volume brings the audio out of mute.

- Test FREEZE and BLANK if available on the CB6000.

- Repeat the above tests from the Encore software if it has been installed on the teacher's computer.

- Test the microphone by turning the mic on and speaking. Walk around the room to ensure strong coverage from all areas.

Network Settings Addendum

How to change your computer's wired network adapter from automatic (DHCP) to fixed (static)

The screen shots for this procedure were taken from a computer running Windows 7. Other versions will likely have a different look, but the general procedure is identical. The goal is to get to the screen where you can change your network adapter from "Obtain an IP address automatically" (referred to as DHCP) to "Use the following IP address (referred to as static). Making this change is essential for connecting your computer to a FrontRow network device.
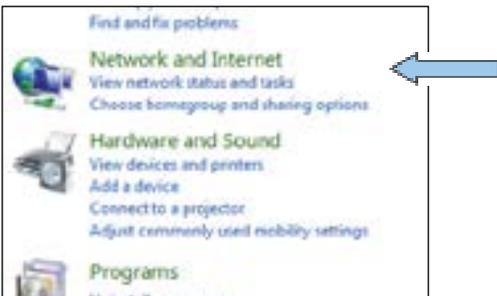
1. Click on the Windows start button located on the lower left portion of your screen
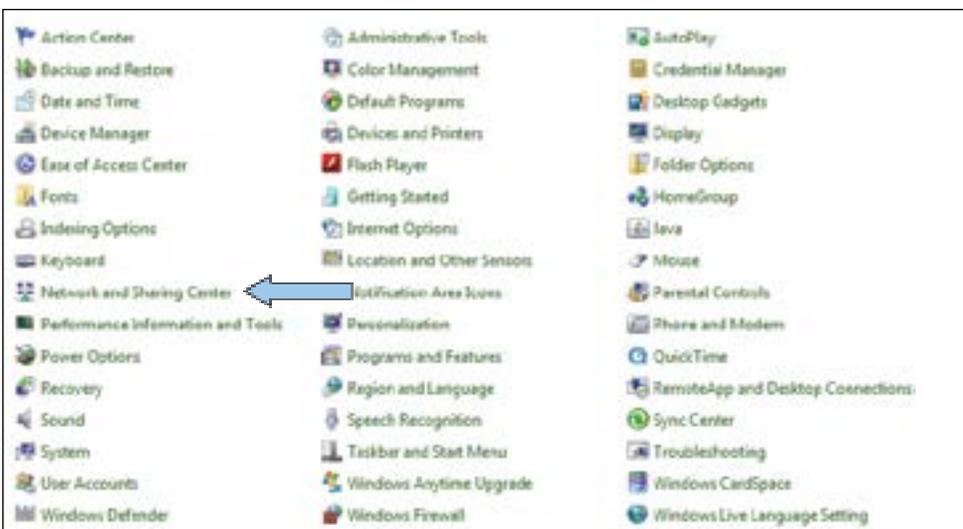

2. Click on **"Control Panel"**

3. Click on **"View network status and tasks"**

NOTE: *Depending on how your computer is setup you may see an alternate view such as below, if so select "Network and Sharing Center"*
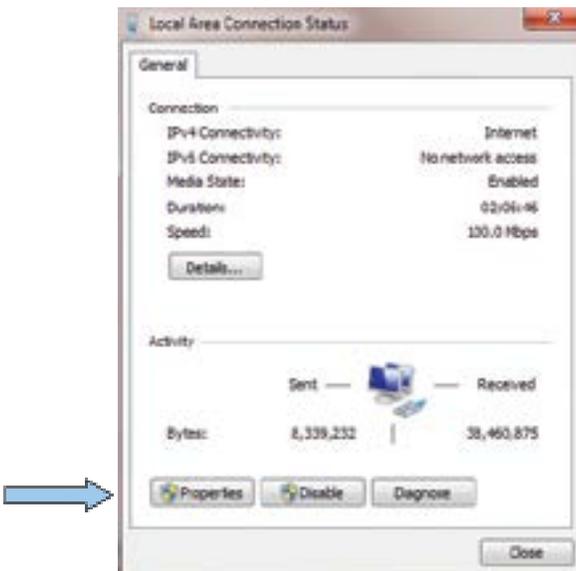
4. Click on **"Change adapter settings"**
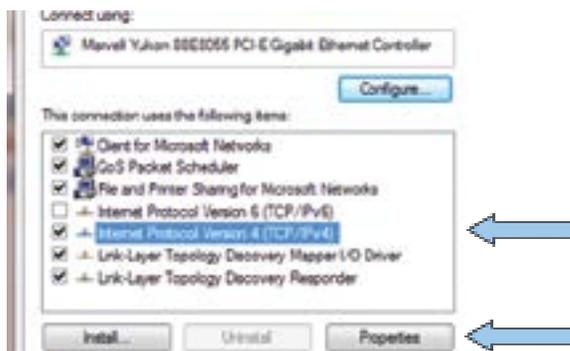**NOTE:** *This selection may have different wording such as "Manage Network Connections"*

Control Panel Home

Manage wireless networks

Change adapter settings

Change advanced sharing
settings

5. Double click on **"Local Area Connection"**

Local Area Connection
Network cable unplugged
Marvell Yukon 88E8055 PCI-E Gig...

6. Click on **"Properties"**

Local Area Connection Status

General

Connection
IPv4 Connectivity: Internet
IPv6 Connectivity: No network access
Media State: Enabled
Duration: 02:06:46
Speed: 100.0 Mbps

Details...

Activity

Sent —   — Received

Bytes: 8,339,232 | 38,460,875

Properties   Disable   Diagnose

Close

7. Select **"Internet Protocol Version 4",** then select **"Properties"**

Connect using:

Marvell Yukon 88E8055 PCI-E Gigabit Ethernet Controller

Configure...

This connection uses the following items:

☑ Client for Microsoft Networks
☑ QoS Packet Scheduler
☑ File and Printer Sharing for Microsoft Networks
☐ Internet Protocol Version 6 (TCP/IPv6)
☑ Internet Protocol Version 4 (TCP/IPv4)
☑ Link-Layer Topology Discovery Mapper I/O Driver
☑ Link-Layer Topology Discovery Responder

Install...   Uninstall   Properties

12

8. Select "Use the following IP address"

9. Enter the IP address of **192.168.1.100** as a default for connecting to FrontRow network devices
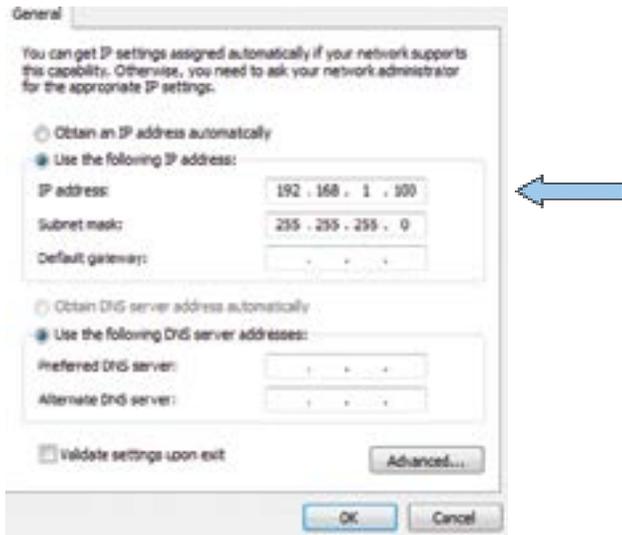
10. Click in the subnet mask area and it should automatically fill in **255.255.255.0**, if not simply type it in

11. Select OK then close each window and back out of these screens

NOTE: To change your computer back to DHCP follow the same process but select "Obtain an IP address automatically" from the General network page.

Default IP addresses for Frontrow devices:

Device	IP Address
CB2000	192.168.1.104
CB6000	192.168.1.104
CM3000	192.168.1.103
CM800	192.168.1.103
CM800S	192.168.1.103
CMP500	192.168.1.103
Soundpost	192.168.1.103
DRS5000 Server	192.168.1.99
Shuttle PC	192.168.1.98