This manual is for basic setup for live streaming and/or recording events using Wirecast

Pre-production

The most important thing to do before production is complete a site survey to make sure you can produce a program using the technology we are utilizing.

1. Check with the owner/manager of the site that we can do a production from the location and get a written release form.
2. Ask for access to the Internet (name and password of their router) at the location. *(If they don't provide it, we can not do a live stream)*
3. Check to see if you have WiFi signal strong enough to do streaming or see if you can connect directly to the local router
4. Check locations where you can access power for possible camera placement *(you don't want iphones and ipads to drain their batteries when used as cameras)*
5. Ask how the event/presentation will occur so you can determine final placement of cameras and other production equipment.

Production Setup

Power Requirements

Run an extension cord for power to the location where you are setting up to stream your production. You will need power for the laptop that has the Wirecast program, the Premier Wireless Microphone System, the XENTIX Q802 Audio Mixer and at least 2 spare outlets. Since it is recommended to have at least 5 outlets, add a power strip to the end of the extension cord.

The spare power outlets provide additional options when configuring the production setup. You could use an outlet for the Almond Router/Repeater if it is going to reside next to the reset of the equipment. This would allow you to connect the computer directly into the Router/Repeater providing a stronger outgoing signal. You could also use the spare outlets to power any networked device that receives Youtube so you can monitor what other people are seeing or you can use the extra outlets to power an external camera.

Network Requirements

The type of production and the availability of Internet access will determine how you configure the network for Point Roberts TV. There are 3 basic setups for production:

Setup 1: Wifi as a Local Area Network for Recording Only When Internet IS Not Available

1. Plug the Almond Wifi Extender in and let it cycle through the windows until you get the secure lock symbol.
2. When it is done cycling through the windows take the stylus and press the reset button between the USB and Ethernet connections on the Almond
3. Select "English" as the language
4. Select " North America" as the region
5. Select "Start Wizard"
6. You should already have the stylus so click next
7. Choose Router
8. Skip step 3 if there is no Internet and you are just using the wifi to connect cameras to the computer for recording
9. Tap on "Edit Wifi Settings"
10. Change Name (SSID) to: **PRTV** and password to: **xxxpassword** and then click: **Apply**
11. Push Exit

You should now be able to link in all the wifi cameras to the computer using the Wirecast program with the **PRTV** wifi network name and the **xxxpassword** password even though they are only local area network

Setup 2: Almond as a Wifi router when hard wired to another Network's router for streaming and/or recording

1. Plug the Almond Wifi Extender in and let it cycle through the windows until you get the secure lock symbol.
2. When it is done cycling through the windows take the stylus and press the reset button between the USB and Ethernet connections on the Almond
3. Select "English" as the language
4. Select " North America" as the region
5. Select "Start Wizard"
6. You should already have the stylus so click next
7. Choose Router
8. Next connect a Ethernet cable from the output of the local internet router to the gray input on the Almond and let it acquire the internet connection from the local source
9. Tap on "Edit Wifi Settings"
10. Change Name (SSID) to: **PRTV** and password to: **xxxpassword** and then click: **Apply**
11. Push Exit

You should now be able to link in all the wifi cameras to the computer using the Wirecast program with the **PRTV** wifi network name and the **xxxpassword** password and have Wirecast stream live on the Internet.

Setup 3: Almond as a Wifi repeater for streaming and/or recording when you can't hard wire to another networks router for streaming and recording

1. Plug the Almond Wifi Extender in and let it cycle through the windows until you get the secure lock symbol.
2. When it is done cycling through the windows take the stylus and press the reset button between the USB and Ethernet connections on the Almond
3. Select "English" as the language
4. Select " North America" as the region
5. Select "Start Wizard"
6. You should already have the stylus so click next
7. Choose "Range Extender"
8. Choose the network you are using from the list on the left and enter in the password for that network and click next
9. Connect all devices to the network named "PRTV" but use the password that you used to connect the existing local nedtwork
10. If they do not connect tap "Edit Wifi Settings" and make sure the password is the same as the local wifi network. If not then enter it in and click apply then try connecting the devices again to PRTV
11. Click Next and then click Exit

Preliminary Steps for Streaming

Setting Your Output Stream Rate

After you have connected the Almond Router/Repeater to the local Internet source, connect the computer that has Wirecast to the Router/Repeater. If possible use a Ethernet cable when connecting to the Almond and if not then connect by wireless.

Once you are connected to the Almond launch a web browser (Safari, Firefox etc..) and do a internet speed test at: http://www.speedtest.net

If the upload speed is less that 0.80mps there is no chance of having a steady video stream. The upload speed allows you to calculate the encoding speed for the live stream. The rule of thumb is that the encoding speed should be close to half of the upload speed. Most upload speeds from homes are 0.87mps. Launch the Wirecast Stream Template you are going to use for the live stream and go to the Output Settings. In the Output pull down menu and choose **YouTube: 240p Recommended**. This recommended setting will show that it has bitrate of 528k (slightly more than half of the 0.87mps). Even this may be too high to get a clean stream so the 2nd option would be the setting for **Youtube: 240p Minimum** with a bitrate of 428k (which is half of the 0.87mps).

Setup For Production

Setting Up Audio

1. Unpack the **Premier Wireless Microphone System Receiver** and the **XENYX Q802 USB Mixer** and plug both of them into power.
2. Connect the **RadioShack Microphone** to the XLR to male Phone Connector *(if you need to extend the cable length add addition sections of XLR to XLR cable with the last cable being the XLR to male Phone Connector)*
3. Connect the male Phone Connector on the **RadioShack Microphone** into **line In** for **Input 1** on the **XENYX Q802 USB Mixer.**
4. Connect one end of the male to male Phone Connector that comes with the **Premier Wireless Microphone System Receiver** to the **AUX** output on the back of the of the receiver and the other end into **line In** for **Input 2** on the **XENYX Q802 USB Mixer.**
5. Put 2 new AA batteries in each of the wireless microphones
6. Set the audio levels for both Mics on the back of the **Premier Wireless Microphone System Receiver** to halfway. *(The audio levels can be adjusted later but if they are turned up to high you will get hiss)*
7. Connect the USB cable that comes with the **XENYX Q802 USB Mixer** to the back of the mixer with the USB connector going into one of the USB inputs on your streaming computer
8. Set the levels for **Input 1**, **Input 2** and the **Main Mix** to the straight up and down position
9. Launch the Wirecast and on the FaceTime Camera (the computers built in camera) click on the sprocket to the lower right of the image and choose **Change Audio**. Make sure that the only audio that has a check mark is **USB Audio Codec Audio**
10. Plug headphones in the audio jack on the computer
11. Put the FaceTime Camera up on Preview in Wirecast and click on the small headset symbol to the lower left of the Preview image.

You should now be able to monitor the audio from the wireless and wired microphones and adjust the levels when needed by listening through the headphones.

The first area to adjust would be the gain just below where you plugged in the Phone Connectors on the Mixer. Then adjust the Level controls for each Input you are using. The last adjustment would be the Main Mix that affects the level for all inputs. Using the **USB Audio Codec Audio** gives you the best audio quality. You can only use the audio from the **USB Audio Codec Audio** with cameras that are connected directly to the computer doing the streaming. If you try to use this audio with cameras connected to Wirecast by WiFi the audio will not be sync'd with the video.

Setting Up Cameras
Logitech C930e Camera

1. Connect the C930e camera directly to one of the USB ports on the computer. (*The camera should be mounted on a tripod for stability.)*
2. Add the camera to the Wirecast system it is listed as the **Logitech Webcam C930e Video Shot.**
3. When adding this camera to the Wirecast make sure you have selected the **USB Audio Codec Audio** as your audio source. *(At this time the C930e and the built in Facetime camera on the computer will be the only camera's that have sync'ed audio to the audio from the **XENYX Q802 USB Mixer.)***
4. Launch the Logitech Camera Control/Settings app. The app will allow you to preform electronic zooms, pans and tilts on this camera.
5. In Wirecast, go to **Sources** and choose **Show Source Settings.**
6. Select Logitech Webcam 930e Video from the **System Devices** list.
7. Adjust the **Video Settings** for the camera to the **Y'CbCr 4:2:2** to the closest resolution to match the outgoing stream bitrate that you should have already determined. *(All cameras should be set to the same resolutionand bitrates to allow for smooth transitions and provide for a smooth stream with few dropouts)*

Using Iphone as a Camera

1. You need to prevent calls from coming into the Iphone if it is being used as a Wifi camera during a show. To do this go to **Settings/Do No Disturb** and adjust the following settings *(Remember to go back to your original settings after the show)*:
    a. Manual: **On**
    b. Allow Calls From: **No One**
    c. Silence: Check "**Always**"
2. Plug your Iphone into the charger *(long camera use can drain the battery)*
3. Then launch **Wirecast Cam App**. on the Iphone
4. Make sure the Mic and the Light symbols are X'd out on the Wirecast Cam App. *(You do not want to use the internal Mic or the Light since these do not really help during a multi-camera production.)*
5. Push the sprocket button on the Wirecast Cam App. To get to the app settings:
    a. Set Resolution to that which was determined when preforming the speed test so it is equal to the other cameras
    b. Set Audio to off *(not green)*
    c. Set Key Frame Interval to 1 second *(this allows for faster stream from phone to the computer doing the streaming, There is always a delay in the stream from Wifi cameras and this may need to be adjusted to a longer delay if the image freezes up on the streaming computer)*
6. Push done after adjusting the settings and then push the red circle to allow access streaming computer to the Iphone

Using Ipad as a Camera

1. Plug your Ipad into the charger *(long camera use can drain the battery)*
2. Then launch **Wirecast Cam App**. on the Ipad
3. Make sure the Mic is X'd out on the Wirecast Cam App. *(You do not want to use the internal Mic since it does not really help during a multi-camera production.)*
4. Push the sprocket button on the Wirecast Cam App. To get to the app settings:
    a. Set Resolution to that which was determined when preforming the speed test so it is equal to the other cameras
    b. Set Audio to off *(not green)*
    c. Set Key Frame Interval to 1 second *(this allows for faster stream from phone to the computer doing the streaming, There is always a delay in the stream from Wifi cameras and this may need to be adjusted to a longer delay if the image freezes up on the streaming computer)*
    d. Set the Bitrate to the speed determined when preforming the speed test
5. Push done after adjusting the settings and then push the red circle to allow access streaming computer to the Iphone

Digital Cameras Using a USB Converter

(We do not have one of these yet so this section will remain empty)

Additional Notes on Cameras

Using the Iphone and Ipad as cameras allow for adding many additional shots when doing a program. Their greatest drawback is that the Wifi signal is always delayed by at least 1 second and this could be more if the Wifi speed is limited. Think of using the Iphone and Ipad cameras for wider cutaway shots. The Iphones and C930e Camera can be mounted to the tripods but the Ipads need a flat area they can be set up on. The C930e Camera has can be adjustmented for brightness, contrast , and color through cameras control software. The only control you have over the Iphone and Ipad image is to tap their screens on the area you want them to use as source for their automatic white balance adjustments.

Setting Up Wirecast Play
Creating a Program Templete

1. If a template for the program does not already exist then launch the PRTV.wcst template
2. Go to the **File** pulldown menu and do as **Save As** using the name **PRTVname.wcst** with the name being a unique of your production *(example: **PRTVpuppetshow.wcst** for a puppet show. This is the template you will now use to switch between the camera shots, computer screen presentations, videos, pictures and graphics)*
3. Close down the template and then launch the new template that has the name you created.

Your Wirecast template can be configured many different ways. At the top of the template you will see the **Preview** window on the left side and the **Live** window on the right side. Below the Preview and Live windows are multiple layers that have a **Blank** shot at the beginning of each layer. We will not be covering how to use the layers for special effects and graphics in this tutorial. In the 3rd layer you will see the **Facetime HD Camera** from the Mac. If you are using Facetime camera as a live shot you will also be using the built-in microphone on the Mac. It is best to use the microphones from the mixer for all shots so the audio is consist during the production. Click on the sprocket to the lower right of the image for the **Facetime HD Camera** and choose **Change Audio**. Make sure that the only audio that has a check mark is **USB Audio Codec** which is the mixer.

Adding Additional Sources
Cameras, Images, Videos, Computer Presentations

1. On the 3rd layer to the right of the Facetime HD Camera, mouse over the + symbol. You will see 4 symbols (Camera, Speaker, Computer, Document)
2. To add a new camera choose the Camera symbol (if the **Logitech C930e Camera** is plugged in then you can choose it. If a Iphone or Ipad is using the **Wirecast Cam App**. and they are on the same network as the computer running Wirecast you can choose one of them.)
3. Once you choose the camera you want to add it should appear in a new window. Go to the sprocket to the lower right of the image and choose **Change Audio**. Make sure that the only audio that has a check mark is **USB Audio Codec** which is the mixer.
4. Keep repeating this process until you have added all of your cameras.
5. To add a new Image or a Video shot choose the Document symbol. This will launch a window that allows you to choose a image or video on your computer to add.
6. Go to the sprocket to the lower right of the image and choose **Change Audio**. (If you are using a image make sure that the only audio that has a check mark

is **USB Audio Codec** which is the mixer. If you choose a video then make sure the audio for that video is checked so you can hear sound from the video as well has having the **USB Audio Codec** checked so you can speak over the video if needed.)

7. To add a presentation from the computer launch the presentation example: If the presentation is a PowerPoint launch the file for the PowerPoint Presentation.
    a. Under the menu **Slide Show** choose **Set Up Show.**
    b. Then choose **Browse by and individual.**
    c. Launch the slide show and it should come up in a window on the computer.
8. After you have launched the presentation go to the next + symbol in the 3rd layer and click the Computer symbol and choose **New Local Desktop Presenter.** This will open a new **Source Settings** window.
9. Make sure capture type is set to **Window** then click on **Select Window/Monitor**
10. Make sure the **Application** is **PowerPoint** and the **Window** is the name of the presentation you wish to show.
11. Double click on the temporary **Local Desktop Presenter** number for your presentation from the left column and give the presentation a unique name the close the **Source Settings** window.
12. Go back to the next + symbol in the 3rd layer and click the Computer symbol again and choose to add the shot with the unique presentation name. *(You should now see the presentation as a choice of shots. You can reduce the presentation on you're the computer to hide it until needed. If you reduce the presentation the shot will appear to be blank but have the unique name. The presentation image will only appear when you have the presentation on the desktop.* ***Warning: If you quit the presentation at any time you will need to reconfigure it all over again****.)*
13. Go to the sprocket to the lower right of the presentation image and choose **Change Audio**. (make sure that the only audio that has a check mark is **USB Audio Codec** which is the mixer.)

Basic Production Rules

1. Always have at least one wide cover shot or an image that you can go to if you run into problems
2. In Wirecast click on the **Stream** button in the upper left of the program by where it says Wirecast Play a good 10 minutes before the actual program starts and have a cover image as your live shot at this time. *(This should help establish a steady live stream before your actual start time)*
3. The **Arrow** button below the **Preview** and **Live** shots allow you to transition between the images and types of transitions are controlled by the 2 buttons to the left of the Arrow.
4. Clicking an image in a layer will move it to the **Preview**