**Audio Video Stream Service (AVSS)**

**User Guide**

Turn a Raspberry Pi into an audio video streaming service that can either live stream to Facebook or broadcast using UDP on port 4569.

**Overview:**

1. Switch on beeps twice when ready.

2. Press switch to start/stop stream; LED lights up when streaming.

3. Long press (4 sec or more) to shut down.

**Things We Need:**

**<image\_01>**

Raspberry Pi Pi Camera Network Cable

USB Soundcard Headphones Power Cable

**Initial Setup Process:**

Connect the headphones, network cable, USB soundcard, power cable and power up the Raspberry Pi. Put the headphones on within a minute of the Pi starting and you will hear "Hello this is Raspberry Pi and my IP address is ...". Write down the IP address, you will also hear through the built-in speaker two beeps to notify you that the Pi is ready. Using a computer connected to the local network open a web browser and type the IP address you wrote down followed by a colon and port number 8000 i.e. if the IP address is "192.168.0.10" type 192.168.0.10:8000 into the browser. This displays a webpage with a preview of the camera image and the settings you can modify. At the bottom of the page are buttons to save, reset and links to help and info. Click onto the help link for further operating instructions.

**Startup Process:**

Power up the RPi and wait until you hear 2 beeps and if headphones are connected the words "Hello this is Raspberry Pi and my IP address is ..." followed by the IP address of the device. This indicates the Pi is ready to start streaming.

**Start Stream:**

Press the switch once to start streaming to facebook (using the supplied stream key) or for to test your settings before streaming live to Facebook you can select 'Startup UDP'. This broadcasts over the local area network (LAN) using UDP (i.e. udp://224.0.0.1:4569). The LED, speaker will flash and beep 4 times (morse code letter 'v' for videoing) before starting the stream if headphones are connected you will also hear the words "Starting stream" Once streaming begins the led remains on.

**End Stream:**

To stop the stream press the switch again the LED and speaker will flash and beep once (morse code letter 'e' for ending) and the words "Ending stream" can be heard through the headphones. The LED will remain off once the stream has stopped

**Shutdown Process:**

To power down the RPi press and hold the switch for four seconds; the led flashes and the speaker beeps three times (morse code letter 's' for shutdown) and the words "Shutting down" can be heard through headphones before starting the shutdown process.

**Advanced Setup:**

Using a computer connected to the local network we have two ways to connect to the Pi, Secure Shell Protocol (SSH) or if installed onto Raspbian full version - Virtual Network Computing (VNC).

**Using SSH** To connect using SSH download and install Putty. Using Putty connect to the Pi with the IP address you wrote down i.e. if the IP address is "192.168.0.10" type 192.168.0.10. Type in the username (pi) and password (default is raspberry). Once connected using SSH type 'cd /home/pi/.av\_stream' to change directory; type 'ls -a' to view all the files for Audio Video Streaming Service.

**Using VNC** To connect using VNC download and install TightVNC. Using TightVNC connect to the Pi with the IP address you wrote down, two colons and port number 5901 i.e. if the IP address is "192.168.0.10" type 192.168.0.10::5901 Type in the username (pi) and password (default is raspberry). Once connected using VNC navigate to the '/home/pi/.av\_stream' directory to view all the files for Audio Video Streaming Service.

**NOTE:-** If you are connected using VNC you may notice that OBS Studio is installed. THIS IS FOR TESTING PURPOSES ONLY! Currently as of April 2021 OBS Studio does not utilize the graphics processor (GPU) for hardware encoding, leaving only software encoding using the CPU. When recording or streaming this over-works the poor Pi which can only a manage 5fps at 1920x1080, 10fps at 1280x720 and 18fps at a resolution of 960x540. The CPU will reach 75 degrees centigrade very rapidly. For this reason, this should not be used for long periods or it will eventually damage the Pi. Like I said earlier only for testing purposes.

**Config.ini file:**

The config file can be found in the **/home/pi/.av\_stream** directory. Most of the settings can be modified using the webpage. Some settings can only be only be modified using SSH or VNC.

**Updates:**

Updates are downloaded and installed every day, every week, or every month. You can also choose to update/upgrade the operating system.

**Troubleshooter:**

If you hear the sos distress message in morse code (ie dot-dot-dot dash-dash-dash dot-dot-dot) repeating, either plug in a pair of headphones and listen to one of the following error messages:

Warning no camera detected

Warning no USB sound card detected

Warning no network detected

Warning no internet detected

or you can open the info webpage scroll down to Hardware and check that the camera, sound card, network and internet have been detected:

**Hardware:**

Camera Supported: **True**

Camera Detected: **True**

USB Sound Card Detected: **True**

Network Detected: **True**

Internet Detected: **True**

If any of the above is set to False check that the cables are connected properly.

**GPIO Pin Configuration:**

The Raspberry Pi has a 40 pin connector some of which can be used as inputs or outputs. These connectors are called General Purpose Input Output pins. The following pin numbers have been allocated:

Pin 4 ....... Positive Cooling Fan + (red cable) 5v

Pin 6 ....... Negative Cooling Fan - (black cable)

Pin 8 ....... PWM Cooling Fan Switch (blue cable)

Pin 12 ..... Streaming LED + (red cable)

Pin 14 ..... Streaming LED - (white cable)

Pin 17 ..... Streaming Switch + (red cable) 3v

Pin 18 ..... Streaming Switch - (black cable)

Pin 30 ..... Piezo Speaker - (black cable)

Pin 36 ..... Piezo Speaker + (red cable)