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HOW TO USE A RASPBERRY PI SINGLE BOARD COMPUTER AS AN ETHERNET ADAPTER, TO REMOTE CONTROL AND LISTEN TO THE AR8600MK2 RECEIVER THROUGH YOUR LOCAL NETWORK.
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Difficulty level: Basic to intermediate

You must be comfortable with operating the Raspberry Pi and Raspberry Pi O.S, using a command prompt to manipulate files and folders, and know about IP addresses.

These instructions are voluntarily limited to remote controlling the AR8600MK2 receiver through your local network. Although it is possible to remote control through Internet, it would require a more complicated set-up, especially regarding "port-forwarding" on your router, and this is beyond the scope of this document.

HARWARE REQUIREMENTS:
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-AR8600MK2 receiver, with the serial communication speed set at 19200 bps.
-Raspberry Pi single board computer. We confirmed it working on a RPI3B+ but any version should work as it does not use much resources. However, with RPI Zero you might struggle with the lack of USB ports.
-Powered USB-HUB for RPI models where there are less than 4 USB sockets.
-(9 pin, male) Serial to USB converter cable. Connect the serial side to the receiver, and USB side to the Raspberry Pi.
-USB audio adapter (with MIC or LINE input). Connect to Raspberry Pi's USB port.
-Jack 3.5mm male-male audio cable. Connect one side to the receiver's "Phones" or "Ext.sp" socket, the other into the USB audio adapter's MIC/Line-in. The receiver's audio level should be set fairly low to avoid audio distortion on the client side. You can always adjust it later.
-Computer to run the client software. Operating system unimportant, as long as it runs JAVA.

SOFTWARE SETUP:
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First, make sure that Raspberry Pi O.S is up to date with:
sudo apt-get update
and
sudo apt-get upgrade

1. Necessary files supplied by AOR:

aorlan.tar.gz ---> For the SERVER side: Needs to be installed on the Raspberry Pi, as per instructions below.
AR8600E.jar ---> FOR THE CLIENT computer: Java client software to control the AR8600MK2

2. Install software on the Raspberry Pi (=server)

Copy the file aorlan.tar.gz to a Raspberry Pi directory of your choice (/home/pi in our example)
Open a command window and type:

$ tar -x -f aorlan.tar.gz

This will decompress the file and create a folder named "aorlan".
This folder will contain following files:
aorlan
arlan
lanserv.conf

3. Install the following package:

$ sudo apt-get install alsa-utils

4. Check your USB audio adapter's CARD and DEVICE numbers, these will be needed in step 6:

$ arecord -l

The response will be something like this:

**** List of CAPTURE Hardware Devices ****
card 1: Device [USB Audio Device], device 0: USB Audio [USB Audio]
  Subdevices: 1/1
  Subdevice #0: subdevice #0

So in our example, CARD is 1 and DEVICE is 0.

5. Check the USB-serial converter connection reference, this will be needed in step 6:

$ ls -F /dev |egrep ttyUSB

The response will be something like:

ttyUSB0

6. Start the server software "aorlan" by typing:

$ cd aorlan
$ ./arlan /dev/ttyUSB0 plughw:1,0

"ttyUSB0" is what you found out in step 5.
"1,0" is what you found out in step 4.

(Only this step #6 will be necessary to start the program every time after the Raspberry Pi has rebooted)

To stop the server: CTRL + C.

7. Copy AR8600E.jar to the "client" computer. No install necessary.

8. Double-click AR8600E.jar to start the receiver control program.
The only parameter to set is the (internal) IP address of the Raspberry Pi on the same network, and click CONNECT. (To find out the IP address, open a command window on your Raspberry Pi and type "ifconfig". It should be something like 192.168.1.XX)
Username, password, TCP and UDP ports are already preset. If you wish to use different values, you need to edit first the file "lanserv.conf" on the Raspberry Pi.

Default values for "lanserv.conf" as follows:

tcp port: 48752
udp port: 48752
timeout: 15
Serial communication speed: 19200bps (it is very important that your AR8600MK2 receiver has the same speed selected in the CONFIG menu, or the communication will fail.)
Username: a
Password: b

Client software (AR8600E.jar) details:
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Known limitations:
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AUDIO LEVEL has to be changed from within the operating system, as it is not possible from inside the control software. This is a known hardware limitation of the AR8600MK2 receiver, as its CPU does not feature any command to control volume.
The SCOPE (spectrum display) is very slow and therefore disabled (unchecked) by default.

When you click "connect" for the first time, settings are saved in a file "conf8600.txt" created on the same directory than where AR8600E.jar is being executed. It is possible to edit this text file to preset different values if needed.

Ideas:
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For testing purposes you can also run the Java client software on the raspberry pi, in other words the server and client are on the same machine.
To do that, you must first install Java on the Raspberry Pi:
$ sudo apt update
$ sudo apt install default-jdk

Here is how to run AR8600E.jar:
Let's suppose that AR8600E.jar is in the "aorlan" folder:
$ cd aorlan/
$ java -jar AR8600E.jar

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Have fun!!!
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