HVDN Communicator

Supplemental Information

Hudson Valley Digital Network

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v1.0

Introduction

This is a guide is to supplement the official build guide which only supports Linux. Since the code could be used in an academic setting where the computers available are running alternative OS to Linux. This guild is only meant as a quick guide and does not server as a comprehensive step by step process. It is amused that you are familiar with the Rasberry Pi and by extension Raspbian the Linux based OS that runs on the Pi.

Preparing Media

Download the latest **Raspbian Lite** version which can be found here:
https://www.raspberrypi.org/downloads/raspbian/
Please note the naming convention: “Raspbian {charter from toystory} Lite”
This doc will refer to the OS as Raspbian not it’s full name.

Next follow the Pi documentation for the Computer operation system you are using to create the SD Card.

- **Apple MacOS** https://www.raspberrypi.org/documentation/installation/installing-images/mac.md
- **MS Windows** https://www.raspberrypi.org/documentation/installation/installing-images/windows.md
- **Chrome OS** https://www.raspberrypi.org/documentation/installation/installing-images/chromeos.md

Rpi Connectivity

At this point you now have a SD card formatted with Raspbian Lite, which you will insert into the Rpi and boot by applying power. But wait! How can you communicate with the Rpi once it’s booted? Here are some common supported methods and when to use:

Connecting directly to a Monitor and keyboard

This method is the easiest and most direct, but requires that you have access to a monitor and keyboard. This is not always an option so review the other options if this does not work for you. This method is explained in the main document and is only mentioned for completeness.

Wireless (WiFi) access

This method is the preferred access method. This allows the Rpi to be moved with more freedom. It does require that you have a WiFi router that the Rpi can access (also be access from). Also it is assumed that when the Rpi connects to the network it will be able to access the internet.

Basically, you placed the SD card in a computer to access the boot partition. Once the boot partition is mounted, you will need to create two files ssh (which turns on the SSH server during boot) and wpa_supplicant.conf which contains information on your WiFi setup.

• The file “/boot/ssh”	This is a blank file, zero length. It just needs to exist

• The file “/boot/wpa_supplicant.conf”
 	
You must set name of your router name and your shared key which are highlighted.
 	
Try with WPA-PSK if that does not work, you will need to “google” for an answer
	`ctrl_interface=DIR=/var/run/wpa_supplicant`
	`GROUP=netdev`
	`update_config=1`
	`country=US`
	
	`network={`
	`  ssid="Your network name/SSID"`
	`  psk="Your WPA/WPA2 security key"`
	`  key_mgmt=WPA-PSK`
	`}`

After unmounting the SD card place in Rpi and power up. If the network name and WPA key are correct it will appear on the network as “raspberrypi”. Thus you can ssh to it from a computer (on the same network) via “ssh pi@raspberrypi” the default password is “raspberry” which you will need to change.

Connecting to a PC, Via IP through USB Connection

This method is for when access to a network is not possible for the Rpi but network access is possible from a laptop or PC. Do to DNS resolution issues this method is fought with issues, please be forewarned. This is a description of how, you will need to adapt the OS of the connecting laptop / PC to have this method work.
Mount the SD card on a computer so that you have access to the boot directory. Then edit the following two files:

• The file “/boot/config.txt”	Edit this file and add the new line `dtoverlay=dwc2`
• The file “/boot/cmdline.txt”	This file contains one long line after the rootwait command, add: `modules-load=dwc2,g_ether`
• After editing files make sure to save them. Now unmount the SD card and it is now ready.	

What this does is when the Rpi is connected via USB (inner USB connection) it will appear to the PC as a Networking device. Therefor you will need to configure the computer you connect the Rpi to so that it assigns the RPI a IP address. On MacOS and MS Windows this is done via the “bonjour service” (which is an Apple service). On MacOS no actions need to be taken. On MS Windows, you will need to install “Bonjour Print Services” https://support.apple.com/kb/DL999?locale=en_US . When Bonjour Service is running it will assign the Rpi an IP address when connected, after it boots. Thus you can ssh to it from a computer via “ssh pi@raspberrypi” the default password is “raspberry” which you will need to change.

NOTE: You can combine this method with the previous WiFi instructions. Thus when the Rpi is connected to power and within range of the WiFi router it’s configured to connect to it will connect with that method. If plugged in to a computer where Bonjour Service is running it will get a IP that way (it will NOT connect to the WiFi access point even if in range)

Pi Setup

From this point please follow the main guide as it contains the most up to date information. At this point you should have the SD card in the Rpi and powered up.

• SSH to the Rpi via WiFi	`ssh pi@raspberrypi`
• SSH to the Rpi via USB	`Ssh pi@raspberrypi.local`

Note: that in the next step you will change the hostname from “rasberrypi” to something else.
Note: the default password is “raspberry” which you must change, please make note as that will be the password.