Installation of Raspbian

PiRack S9 Project - 2015-2016

Link to the Rasbian image to download: http://www.raspberrypi.org/downloads/
Raspbian Jessie has been downloaded in this project.

On a linux system

Raspbian installation on SD card

- List the devices mounted on your computer with the "**df -h**" command
- Insert your SD card to the computer card slot
- List a second time the devices connected thanks to the "**df -h**" command
- The new device that has appeared is your SD card. The left column gives the device name of your SD card; it will be listed as something like **/dev/mmcblk0p1 or /dev/sdd1**. The last part (p1 or 1 respectively) is the partition number but you want to write to the whole SD card, not just one partition. Therefore you need to remove that part from the name (getting, for example, **/dev/mmcblk0 or /dev/sdd**) as the device for the whole SD card. Note that the SD card can show up more than once in the output of df; it will do this if you have previously written a Raspberry Pi image to this SD card, because the Raspberry Pi SD images have more than one partition.
- Note the device name
- Run "**unmount /dev/sdd1**", replacing sdd1 with whatever your SD card's device name is (including the partition number)
- If your SD card shows up more than once after the df command, you have to **unmount all of it**
- Write the Raspbian image downloaded to the card thanks to the command below:
"**dd bs=4M if=PATH_TO_THE_IMAGE_FILE.img of=/dev/NAME_OF_SD_CARD**"
If 4M doesn't work, try with 1M
- Make sure the device name is the name of the **whole SD card** as described above, not just a partition of it; for example sdd, not sdds1 or sddp1; or mmcblk0, not mmcblk0p1.
- **sudo** might be necessary if you are not root

SSH connection to the RaspBerry Pi with a local computer

- Browse the previous prepared card with a computer
- Make a copy of **cmdline.txt** and rename it **cmdline.normal**
- Edit cmdline.txt and add the IP address at the end like "**ip=192.168.0.2**" (be sure you don't add any extra lines)
- Make new copy of cmdline.txt and rename it **cmdline.direct**
- Return the card to the Raspberry Pi and connect it to the same network as your computer
- Turn on the Raspberry Pi
- From your computer, connect to the Raspberry Pi using SSH command: **ssh pi@IP_SET_PREVIOUSLY** (password is "raspberry" by default)
- You are now connected to the Raspberry Pi in SSH

Update Raspberry Pi

- Via SSH into the Raspberry Pi, check your internet connection by pinging any website
- Run sudo "**apt-get clean**" then "**apt-get update**"
- install **apt-transport-https** if needed with the command: **sudo apt-get install apt-transport-https**
- You should have downloaded a Raspbian image from version 4.1 or higher. Check your kernel version with the command: "**uname -a**"

Spread the system to the entire card
- sudo run the "**df -h**" command to check the use of the memory space card

- run the "**sudo raspi-config**" command and select the "**expand_rootfs Expand root partition to fill SD card**"
- Validate until the reboot of the Raspberry Pi

Generate rsa private and public keys

- Let's define two machines: **A who wants to connect to B by SSH without password**.
- If you want to generate a new private/public key, run into the **/home/USER/.ssh/** folder the following command: "**ssh-keygen -t rsa**" and type 3 times Enter on **machine A**. Two files will be created: id_rsa.pub (public key) and id_rsa (private key, do not share this one)
- Else, retrieve the keys already backed up.
- On the **machine B** create the following folder: "**sudo mkdir /root/.ssh**"
- On the **machine A**, copy the A **id_rsa.pub file** into a B file named "**authorized_keys**" as follow: "**scp /home/USER/.ssh/id_rsa.pub IP_OF_B:/root/.ssh/authorized_keys**"
- Still on **machine A**, perform a SSH connection to test your configuration with: "**ssh root@IP_OF_B**". It should not ask you for any password to connect to B.

Clone the Raspberry Pi master image for Raspberry Pi salves

- In order to clone the image, on your raspberry system, you first need to **add to /root/.ssh/ authorized_keys** the **public key** in order to allow further SSH connection without password.
- **Make a backup** of the files id_rsa.pub and id_rsa before **erasing** them. Now you are ready to clone the "Slave image".
- Insert your SD card into a computer
- Go to command line, and run the "**df -h**" command to identify your SD card name
- Then, run "**dd if=/dev/sdx of=/path/to/image bs=1M**" where /dev/sdx is your SD card.
- You have now a image to clone into slaves SD cards (go to the Raspbian installation instructions described before).
- **copy back** the id_rsa.pub and id_rsa **into the Raspberry Pi master SD card**