

How to self-install Raspbian Jessie for the DV4Mini

Note: This guide assumes you have a basic working knowledge of the Pi, and are doing this so you can create a streamlined install with just the bare minimum needed to get the DV4Mini software working without a ton of bloat in the image. I will NOT be covering how to setup WiFi on the Pi2 or Pi3, as I don't use that on my builds (they are hard-wired to a network switch).

Step 1 – Acquire the Raspbian image:

Use this link for a direct download, or use their torrent. Do not use the 'Noobs' release!

https://downloads.raspberrypi.org/raspbian_latest

Now write the image to a minimum 8GB micro-SD card (class 10 or UHS-1 ones work the best) using Win32DiskImager:

<https://sourceforge.net/projects/win32diskimager/>

Step 2 – Boot the Pi:

This initial setup can be done totally headless; you do not need a keyboard or monitor at all. The first time I set up my Pi2 and Pi3, my router gave them DHCP addresses, and they were visible in the network list. I then assigned them static IP addresses on the LAN. This makes life 100% easier when performing tweaks & updates via VNC.

Grab the SSH client Putty: <http://www.putty.org/>

You want to simply run this app & enter the IP address of the Pi in the window & connect with the default settings.

Login as: **pi**

Password: **raspberry**

Now type the following command:

```
sudo raspi-config
```

All you want to do right now is expand the file system to fill the SD card. Do that & let the device reboot.

Step 3 – Set up your VNC:

The Pi does not have any kind of VNC accessibility by default. I'm recommending you use x11vnc, as it creates the 'X' environment as desktop '0'. This works the best for the software.

Access the Pi by Putty again, and when you get to the prompt, type the following:

```
sudo apt-get install x11vnc
```

After the install completes, then enter:

```
x11vnc -storepasswd (choose any password that's easy for you to remember)
```

Now, you need to create an auto-start entry to make x11vnc run at boot. At the prompt, type (and hit enter after each one of these lines):

```
cd .config
mkdir autostart
cd autostart
sudo nano x11vnc.desktop
```

Now paste the following text into nano:

```
[Desktop Entry]
Encoding=UTF-8
Type=Application
Name=X1VNC
Comment=
Exec=x11vnc -forever -usepw -httpport 5900
StartupNotify=false
Terminal=false
Hidden=false
```

Then type 'Ctrl+O' to write-out the file & save. Then, 'Ctrl+X' to exit nano.

You now need to start the 'X' desktop environment on boot as well. At the prompt, type:

```
sudo nano /etc/rc.local
```

and paste the following in the line *above* 'exit 0'

```
su -l pi -c startx
```

Lastly, you need to configure the resolution of what x11vnc is going to run at. By default, you will get stuck with some horrid resolution like 640x480. I run a 1920x1080 monitor here, and I like the Pi's to operate at 1440x900, so the settings you see below will provide that resolution. At the prompt, type:

```
sudo nano /boot/config.txt
```

And then un-comment the lines shown below so that they read:

```
hdmi_force_hotplug=1
```

and

```
hdmi_group=2
hdmi_mode=47
```

The mode is what sets the resolution. To see a full list of resolutions available, please visit:

<https://www.raspberrypi.org/documentation/configuration/config-txt.md>

Now, we will reboot the Pi manually to let x11vnc & the X environment start normally:

```
sudo reboot
```

Step 4 – Basic configuration of the Pi via VNC:

You are free to use whatever VNC viewer you choose. I prefer to use VNC Viewer from RealVNC, as it's free & portable:

<https://www.realvnc.com/download/viewer/>

Access the Pi by the IP address used during the Putty configuration, and put in the custom password you set when installing x11vnc.

Go to the taskbar at the top and choose:

Menu>Preferences>Raspberry Pi Configuration

Now you will finish setting up the rest of the core settings that used to be only accessible via the raspi-config tool. Go to the fourth tab & set your localization & keyboard settings as you see fit. Any changes here usually require the Pi to reboot, so let it do what it needs to when you are done.

Step 5 – Installing the latest Mono packages & updating the OS & firmware:

Use the icon in the taskbar at the top to open LXTerminal. At the prompt, enter the following (I highly recommend that the first two sections be separately pasted in notepad first to maintain formatting – if you continue to have issues, you can copy each section directly from [here](#)):

```
sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv-keys  
3FA7E0328081BFF6A14DA29AA6A19B38D3D831EF
```

```
echo "deb http://download.mono-project.com/repo/debian wheezy main" | sudo tee  
/etc/apt/sources.list.d/mono-xamarin.list
```

```
sudo apt-get update
```

```
sudo apt-get upgrade
```

```
sudo apt-get install mono-complete
```

After all the installs & updates are done, you must add the 'pi' user account to the dialout list:

```
sudo gpasswd -a pi dialout
```

Lastly, you now want to update the Pi's firmware to the latest:

```
sudo rpi-update
```

Firmware upgrades require a reboot, so make sure you let the device reboot before going any further.

Step 6 – Installing the DV4Mini software:

First, we are going to create a desktop icon that gives you file manager access as root. *Be very careful with this, as you can really hose things up if you start messing around with things outside of the folders we will be working with!!!*

VNC into the Pi and open the default file manager from the quick-link in the taskbar. Now work your way down into the 'Desktop' folder:

/home/pi/Desktop

You will now right-click & create a new empty file called **'File Manager + Root.desktop'**

Open the new file that you just created by right-clicking & choosing the text editor. Paste the following in that file & save it:

```
[Desktop Entry]
Name=File Manager + Root
Icon=redhat-filemanager
Exec=sudo pmanfm
Type=Application
```

Now, close out of the normal file manager & open the root file manager you just created the desktop icon for.

Create a new folder in the **/home/pi** main folder called **'dv4mini'**.

Now head over to the developer's site and grab the default v1.6 files from September 2015 using the web browser on the pi itself:

<http://dv4m.ham-dmr.ch/V1.6/Linux/ARM/>

You want all the files from **'dv4k.ico'** down to **'xref.ip'**. Once all these are downloaded, place all of them in the **'dv4mini'** folder you just previously created. Now, we need to get the very latest versions (v1.65 as of May, 2016) and make sure you download the matching firmware as well:

http://dv4m.ham-dmr.ch/Testversionen_1.65/Linux_ARM-HF32bit/

Download all three of the files there, and put them in the **'dv4mini'** folder, overwriting the original ones from September 2015.

You now must right-click on the **'dv4mini.exe'** & **'dv_serial'** files & change the permissions to **'Anyone'** in all three areas.

You can now run **'dv4mini.exe'** for the very first time & begin the configuration. That has been covered at least a dozen times in numerous other guides, so I won't re-hash that here!

Step 7 – Creating a desktop icon & making the software auto-start:

Just as before, use the root-elevated file manager to get yourself into the **'Desktop'** folder (**/home/pi/Desktop**).

Right-click and create another blank file called **'DV4Mini.desktop'**. Right-click again on the new file & open it with the text editor. Paste the following:

```
[Desktop Entry]
Name=DV4mini
Icon=/home/pi/dv4mini/dv4k.png
Exec=sh -c "cd /home/pi/dv4mini; mono dv4mini.exe"
Type=Application
```

Save the file, and close it. Now right-click & change the properties to **'Anyone'** just like you did on the 2 core program files.

Now you have a desktop icon to launch the software, and as many have found out, the program runs better when executed this way than from launching the app from the main folder directly. We now need to make the software auto-start on boot.

Copy the **'DV4Mini'** file from inside the **'Desktop'** folder. Go back out to the root of the file manager (**/home/pi**), and press 'Ctrl+H'. This will show you all the hidden system folders. Go into

.config/autostart

and paste the **'DV4Mini'** file you just copied from **'Desktop'** to there. Right-click & check the file's properties in the new location, again changing them to **'Anyone'** as needed. Back yourself out to **/home/pi** and press 'Ctrl+H' to re-hide all the system folders.

Assuming you successfully flashed the latest beta firmware & properly configured the software, you should now be able to execute a forced reboot (**sudo reboot**) from LXTerminal & have the software come right back up after the system comes on-line. *The very first time you run the software to configure it, shut it down while still connected to your favorite reflector in your favorite mode. This will guarantee that the software will come back up & re-connect to where you last were automatically.*

Monthly updates & administration:

Every month, run the following commands again in this order:

```
sudo apt-get update
```

```
sudo apt-get upgrade
```

```
sudo rpi-update
```

Every second month, add the following command in at the 3rd position:

```
sudo apt-get autoremove
```

This will get rid of any out-dated packages & dependencies left by the monthly updates.

5/27/2016 (v3)

Scott Wilson, W2SJW