

Raspberry Pi Stretch Setup Tutorial

Download and Install 7 Zip

<http://www.7-zip.org/download.html>

Download and install SD Formatter

https://www.sdcard.org/downloads/formatter_4/

This software formats all SD memory cards

Download and install Win32DiskImager on to a PC.

<https://sourceforge.net/projects/win32diskimager/files/latest/download>

Download and install Putty

<http://www.putty.org/>

Notepad++

<https://notepad-plus-plus.org/>

Download and load an operating system to your Raspberry Pi

<https://www.raspberrypi.org/downloads/raspbian/>

When finished downloading extract the zipped file using 7Zip.

The Raspberry Pi image contained in the ZIP archive is over 4GB in size, which means that these archives use features which are not supported by older unzip tools on some platforms. If you find that the download appears to be corrupt or the file is not unzipping correctly, please try using 7Zip (Windows) or The Unarchiver (Macintosh). Both are free of charge and have been tested to unzip the image correctly.

Install the Raspberry Pi image on to your micro SD card using Win32DiskImager and your PC.

Review:

Download latest Raspberry Pi zip image

Use 7Zip to unzip file

Format your SD card using SD Formatter for Windows.

Use Win32DiskImager to put the downloaded image onto the micro SD card

Download and install Putty

When finished Insert the micro SD card into the Raspberry Pi and plug the Raspberry Pi 3 into your router with an Ethernet cable. Plug in your TV or monitor with HDMI. Plug in your USB keyboard and mouse, and lastly the power cord.

Raspberry Pi will begin to boot. The Raspberry Pi image desktop and Light versions at this point will differ a little. The Raspberry Pi will resize the SD filesystem automatically.

Enable SSH

Change the default password

Change the time zone

Re-boot you Raspberry PI

Setup your router to give your Raspberry PI 3 a specific IP address.

Set Putty up with the IP Address of your Raspberry PI.

Update and upgrade you Raspberry PI

Once logged back into you Raspberry PI with PuttY, type in “sudo apt-get update” then “sudo apt-get upgrade” If prompted Select “Y” then “Enter”, Then finally “sudo reboot”

Setup SAMBA File Sharing

<https://www.youtube.com/watch?v=iQwWEsuRWUw&t=118s>

Log into your raspberry PI with Putty and type "sudo apt-get install samba"

You will get a prompt "Additional disk space will be used"

You will be asked if you want to continue y/n, type y and press “enter”. Once done type in "sudo nano /etc/samba/smb.conf" to edit the config file. Delete the contents by pressing ctrl key and the K button.

Copy this Configuration and paste it in to the file. Make sure to in-enlarge your putty screen to make sure it’s all in there.

[global]

netbios name = Raspberry PI

server string = The Pi File Center

workgroup = WORKGROUP

hosts allow =

socket options = TCP_NODELAY IPTOS_LOWDELAY SO_RCVBUF=65536 SO_SNDBUF=65536

remote announce =

remote browse sync =

[HOMEPI]

path = /home/pi

comment = No comment

browsable = yes

read only = no

valid users =

writable = yes

guest ok = yes

public = yes

create mask = 0777

directory mask = 0777

force user = root

force create mode = 0777

force directory mode = 0777

hosts allow =

[HOME]

path = /

comment = No comment
browsable = yes
read only = no
valid users =
writable = yes
guest ok = yes
public = yes
create mask = 0777
directory mask = 0777
force user = root
force create mode = 0777
force directory mode = 0777
hosts allow =

Exit by pressing ctrl and X keys then "Y" then the enter key.

Next create a user "pi"
To access the samba share.

Type in "sudo smbpasswd -a pi" type in the password you want to use and press enter.
You will be asked to re-enter it then press the enter key. Lastly restart the Samba Service by typing "sudo reboot"

Install Zip to your Raspberry Pi by typing

```
sudo apt-get install zip
```

Install Notepad++ to your computer (You will need this in the future)

<https://notepad-plus-plus.org/>

OpenHAB 2.1 Installation

Raspberry Pi 2 or newer, compare your existing device here if you are unsure.
SD card (16GB or more to support wear-leveling)
Steady power supply
Ethernet connection

Open Putty, and login to your Raspberry Pi, and type the following.

```
sudo apt-get update  
sudo apt-get upgrade
```

You will be asked if you want to continue y/n, type y and press the enter key.

Now copy and paste the following into the Putty terminal.

```
sudo apt-get install screen mc vim git htop
```

You can find some information at the following website.

<http://docs.openhab.org/installation/rasppi.html>

Zulu is currently the recommended Java platform for openHAB

Make sure to download Zulu or Java 8, as openHAB is not yet compatible with Java 9

```
mkdir ~/zulu
```

```
wget http://cdn.azul.com/zulu-embedded/bin/ezdk-1.8.0_152-8.25.0.76-eval-linux_aarch32hf.tar.gz
```

```
tar xvfz ezdk-1.8.0_152-8.25.0.76-eval-linux_aarch32hf.tar.gz -C ~/zulu
```

```
sudo update-alternatives --install /usr/bin/java java ~/zulu/ezdk-1.8.0_152-8.25.0.76-eval-  
linux_aarch32hf/bin/java 100
```

```
sudo update-alternatives --config java
```

Select 1 from the options

```
java -version
```

```
openjdk version "1.8.0_152"
```

```
OpenJDK Runtime Environment (Zulu Embedded 8.25.0.76-linux-aarch32hf) (build 1.8.0_152-b76
```

```
OpenJDK Client VM (Zulu Embedded 8.25.0.76-linux-aarch32hf) (build 25.152-b76, mixed mode,  
Evaluation
```

```
sudo adduser --system --no-create-home --group --disabled-login openhab
```

Download and extract the latest official stable version of openHAB 2 from bintray.com/openhab to your host:

```
cd /tmp
```

```
wget -O openhab-download.zip https://bintray.com/...
```

```
https://bintray.com/openhab/mvn/download_file?file_path=org/openhab/distro/openhab/2.1.0/openh  
ab-2.1.0.zip
```

```
sudo unzip openhab-download.zip -d /opt/openhab2
```

```
rm openhab-download.zip
```

```
cd ..
```

```
sudo chown -hR openhab:openhab /opt/openhab2
```

```
sudo su -s /bin/bash -c '/opt/openhab2/start.sh' openhab
```

Now open a browser and type the address in. It will look something like ... http://YOUR_RASPBERRY_PI_IP:8080

Close Putty and reopen Putty, and log back into your Raspberry PI

The following will allow you to register openHAB as a service, so that it runs at startup and automatically restarts if openHAB crashes. The service will be running with the privileges of the user “openhab” and expects the openHAB files under /opt/openhab2.

Create the file “sudo nano /lib/systemd/system/openhab2.service” with the following content:

```
[Unit]
Description=The openHAB 2 Home Automation Bus Solution
Documentation=http://docs.openhab.org
Wants=network-online.target
After=network-online.target
```

```
[Service]
Type=simple
User=openhab
Group=openhab
GuessMainPID=yes
WorkingDirectory=/opt/openhab2
#EnvironmentFile=/etc/default/openhab2
ExecStart=/opt/openhab2/start.sh server
ExecStop=/bin/kill -SIGINT $MAINPID
Restart=on-failure
```

```
[Install]
WantedBy=multi-user.target
```

Exit by pressing ctrl and X keys then “Y” then enter.

Next, enable the service to be executed on system startup, start the service and retrieve status information:

```
# initialize the new service (execute only once)
sudo systemctl daemon-reload
sudo systemctl enable openhab2.service
```

```
#start and retrieve status
sudo systemctl start openhab2.service
sudo systemctl status openhab2.service
```

The output of status after a successful execution should be similar to:

```
openhab2.service - The openHAB 2 Home Automation Bus Solution
  Loaded: loaded (/lib/systemd/system/openhab2.service; enabled)
  Active: active (running) since Thu 2016-08-14 01:16:00 GMT; 18h ago
  Docs: http://docs.openhab.org
```

More information can be found at the following website.
<http://docs.openhab.org/installation/linux.html#manual-installation>

Other Links

<http://docs.openhab.org/tutorials/beginner/1sttimesetup.html>

<https://blog.benjamin-cabe.com/2016/04/05/installing-the-zulu-open-source-java-virtual-machine-on-raspberry-pi>

openHAB 2.1 Manual Installation

<http://www.openhab.org/>

Setup your Raspberry Pi for Remote Desktop. (XRDP)

Get your Raspberry PI's IP address from your router devices list.

Open Putty and login to you Raspberry Pi

"sudo apt-get install xrdp" You will get a prompt "Additional disk space will be used" you will be asked if you want to continue y/n, type "y" and press the enter key.

This only has to be done with the previous version of Stretch (2017-09-07-raspbian-stretch)

If you installed SAMBA, and Notepad ++ as described in a previous video, go to "Window Explore" from your PC (I'm using Windows 7) and navigate to your Raspberry Pi under "NETWORK". After you have logged in, navigate through the directories (.config) (lxsession) (LXDE-pi) until you get to the file called autostart. If for some reason you don't see these folders, go to the top of Windows Explorer and select "Tools" and select "Folder options" from the list. Once there click on the tab called "View" and select "Show hidden files and folders" if it isn't already, and click the "Apply" button at the bottom. Once found right click on top of the file, and choose Notepad++ from the list. Once the file has been opened in Notepad++ paste @xhost si:localuser:root at the bottom of the list and save the file.

As of now the only thing that I know has been found is that you will not be able to shutdown or restart your Raspberry Pi within Remote Desktop.

Once downloaded you should be able to remote desktop.

If you use Remote Desktop Connection regularly. You can type "remote Desktop Connection" in the run box, and right click on it and select "Send to" "Desktop (Create Shortcut)" to create a shortcut on your desktop, then when you open it, enter in the IP for your raspberry PI in the field called "Computer" and click the "Connect" button. You will get a prompt, click "Yes" you will then get a prompt for you username "pi" and the password you setup. If using default password use "raspberrypi"

Remote Desktop XRDP with Xorg is working well on Stretch after a fresh install. (2017-09-07-raspbian-stretch)

In order to run 'Raspberry PI Configuration' tool and others that need 'sudo' to run in Remote GUI, I inserted X authorization of 'xhost' for 'root' in:

/home/pi/.config/lxsession/LXDE-pi/autostart --> Insert '@xhost si:localuser:root' as last line.

I should also point out that I no longer have to remove vnc server.

ie. this is NO LONGER REQUIRED WITH STRETCH as it was with jessie:

```
sudo apt-get purge realvnc-vnc-server
```

You may still want to do it to free up space but you no longer have to for XRDP to work.

I also like that XRDP now supports mouse scroll wheel, copy & paste - these were really needed and welcome improvements.

<https://www.raspberrypi.org/forums/viewtopic.php?t=193912&p=1236162>

/home/pi/.config/lxsession/LXDE-pi/autostart --> Insert '@xhost si:localuser:root' as last line.

```
cd /home/pi/.config/lxsession/LXDE-pi/autostart
```

HA Bridge V 5

Create the directory and make sure that ha-bridge-5.0.0.jar is in your /home/pi/habridge directory.

```
mkdir habridge
```

```
cd habridge
```

```
wget https://github.com/bwssystems/ha-bridge/releases/download/v5.0.0/ha-bridge-5.0.0.jar
```

System Control Setup on a pi

```
cd /etc/systemd/system
```

```
sudo nano habridge.service
```

Copy the text below into the editor nano.

[Unit]

Description=HA Bridge

Wants=network.target

After=network.target

[Service]

Type=simple

WorkingDirectory=/home/pi/habridge

ExecStart=/usr/bin/java -jar -Dconfig.file=/home/pi/habridge/data/habridge.config

/home/pi/habridge/ha-bridge-5.0.0.jar

[Install]

WantedBy=multi-user.target

Hit CTL-X and press Y and enter button to save.

```
cd ..  
cd ..  
cd ..  
sudo systemctl daemon-reload  
sudo systemctl start habridge.service  
sudo systemctl enable habridge.service  
  
cd /home/pi/habridge  
nano starthabridge.sh
```

Then copy and paste this, modify any locations that are not correct

```
cd /home/pi/habridge  
rm /home/pi/habridge/habridge-log.txt  
  
nohup java -jar -Dconfig.file=/home/pi/habridge/data/habridge.config /home/pi/habridge/ha-bridge-  
5.0.0.jar > /home/pi/habridge/habridge-log.txt 2>&1 &  
  
chmod 777 /home/pi/habridge/habridge-log.txt
```

Exit and save the file with ctrl-X and follow the prompts, and then execute on the command line:

```
chmod u+x starthabridge.sh
```

Then execute the script:
./starthabridge.sh

The bridge should now be running.
<http://192.168.X.XXX>

You must configure devices before you will have anything for the Echo or other controller that is connected to the ha-bridge to receive.

Sources:

```
http://bwssystems.com/  
https://github.com/bwssystems  
https://github.com/bwssystems/ha-bridge  
https://github.com/bwssystems/ha-bridge/releases
```
