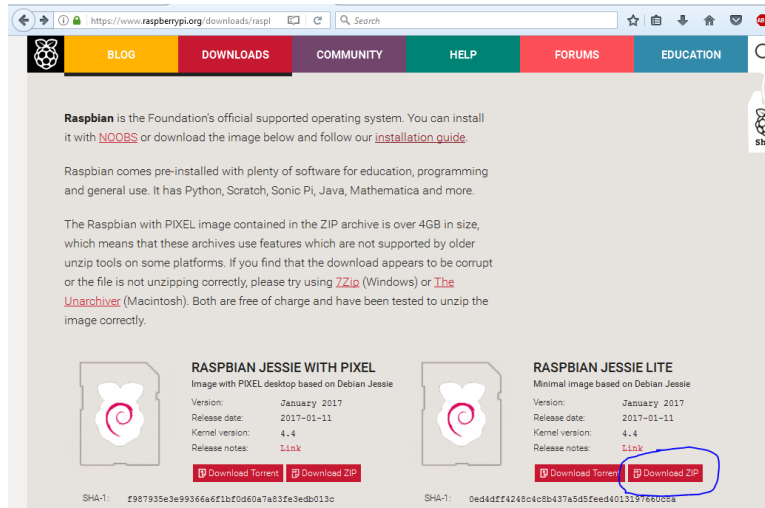


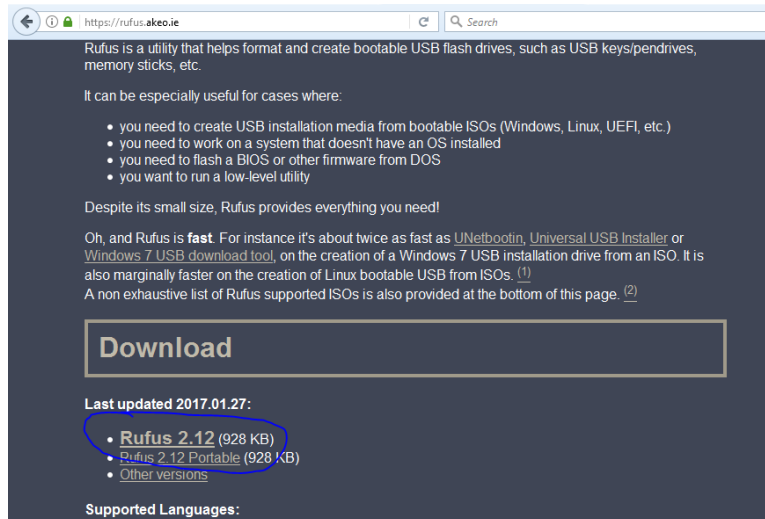
Raspberry Pi Setup

2017 April 2

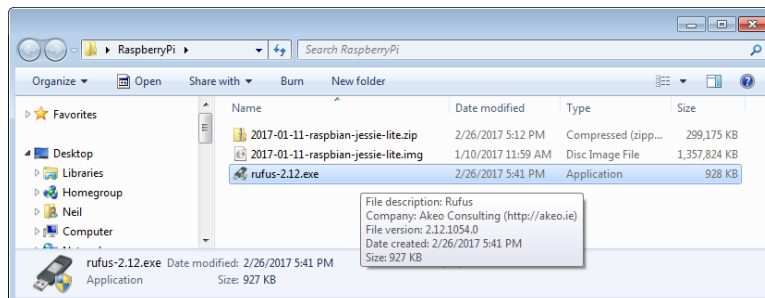
<https://www.raspberrypi.org/downloads/raspbian/>



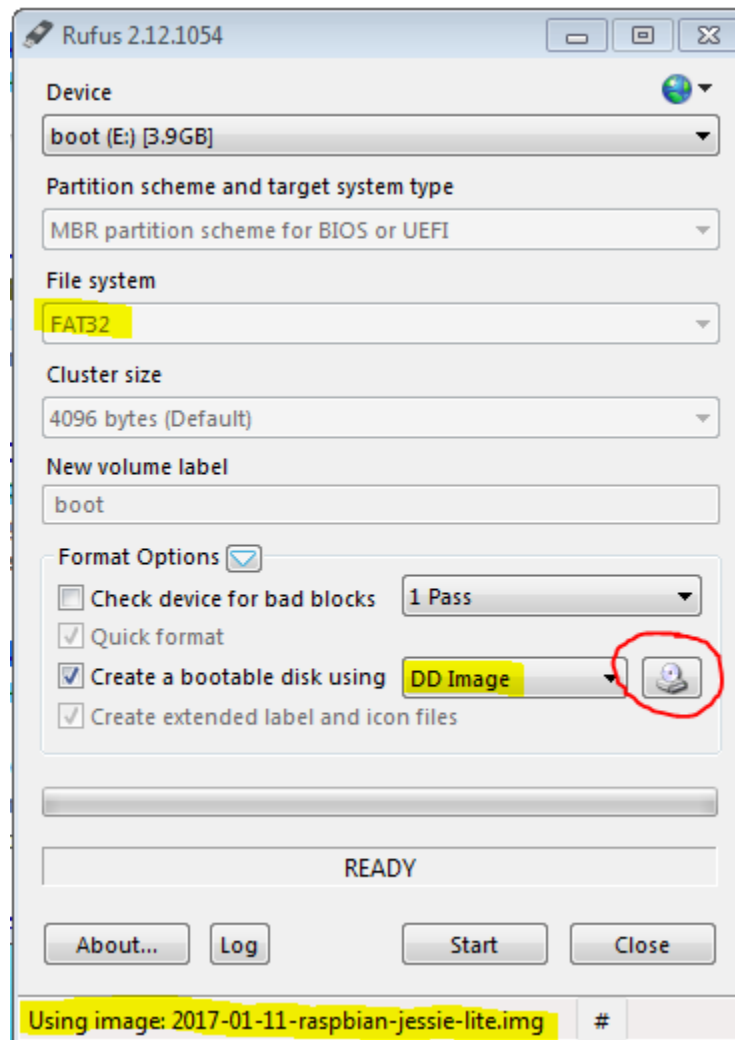
<https://rufus.akeo.ie/>



unzip raspbian using 7-Zip for .img file. Run rufus:



Configure as follows, VERIFY Device letter is correct! Also, be sure to click on the little disc icon to browse to the Raspbian .img.



First time:

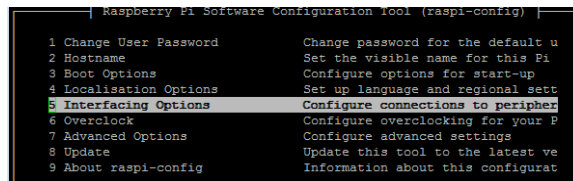
```
raspberrypi login: pi
Password: raspberry

cat /etc/debian_version
8.0
```

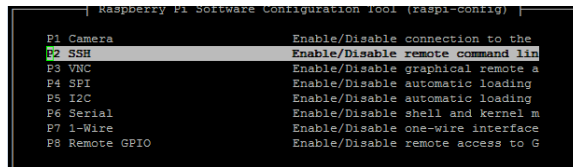
NOTE! Never power-down the Raspberry Pi until after shutting-down Raspbian!
The SD-Card filesystem may easily get corrupted if you do.

To shut-down Raspbian:
`sudo halt`

Enable SSH
`sudo raspi-config`



select Interfacing options [Enter]



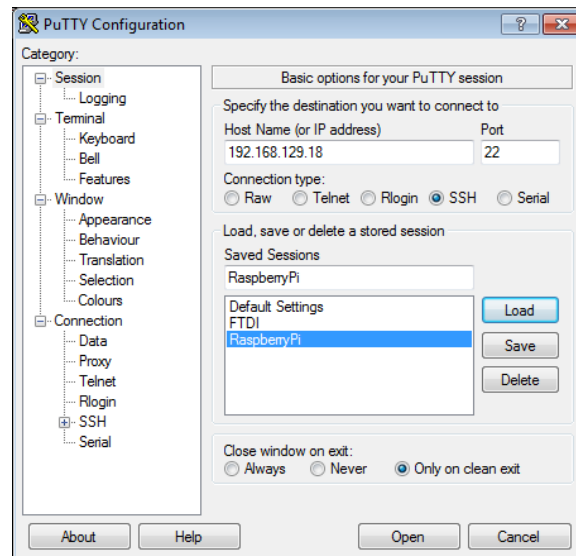
select P2 SSH [Enter]
in popup select "Y" [Enter]

Reboot for SSH to take effect

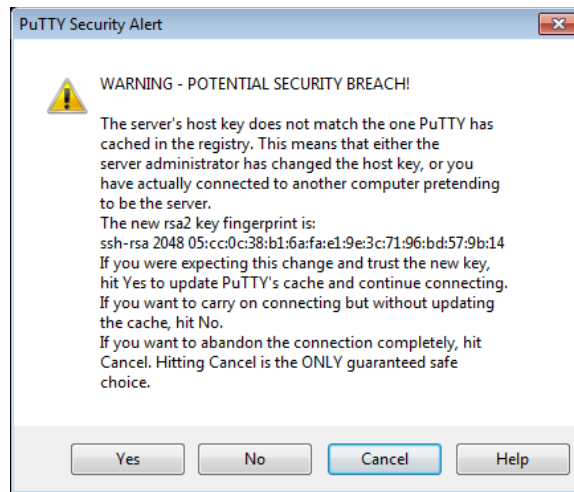
Login pi raspberry

```
ifconfig
eth0      Link encap:Ethernet  HWaddr b8:27:eb:9f:94:85
          inet addr:192.168.129.18  Bcast:192.168.129.255  Mask:255.255.255.0
          inet6 addr: fe80::82be:da70:186:c2d8/64  Scope:Link
```

Open a new instance of PuTTY



Enter the IP address and select SSH as connection type
Click Save, then Open



Click on Yes



Resizing Partitions:

TODO: Document procedure to expand file system to something less than the SC-Card's maximum.

<https://learn.adafruit.com/resizing-raspberry-pi-boot-partition/edit-partitions>

http://elinux.org/RPi_Resize_Flash_Partitions

Installing Java 8 JDK:

Oracle Java 8 is included in the Raspbian distribution, but must be installed to be used.

Check for and get (download) any updates

```
sudo apt-get update
```

Install any newer version found with update above:

```
sudo apt-get upgrade
```

<https://www.maketecheasier.com/install-java-development-kit-raspberry-pi/>

```
sudo apt-get install oracle-java8-jdk
```

```
java -version
```

```
java version "1.8.0_65"
```

```
Java(TM) SE Runtime Environment (build 1.8.0_65-b17)
```

```
Java HotSpot(TM) Client VM (build 25.65-b01, mixed mode)
```

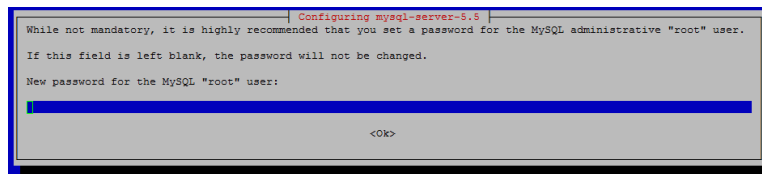
Installing MySQL (5.5):

<http://dbaontap.com/2016/07/17/sql-developer-raspberry-pi/>

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

sudo apt-get install mysql-server
(?? --fix-missing )
```

You will be prompted to enter the MySQL root password (twice). Remember this password!



When complete, you should be able to login to MySQL using the root password created in the previous steps above:

```
mysql -u root -p
Enter password: *****
```

```
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 43
Server version: 5.5.54-0+deb8u1 (Raspbian)
```

```
Copyright (c) 2000, 2016, Oracle and/or its affiliates. All rights reserved.
```

```
Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.
```

```
mysql>
```

Verify MySQL by entering a few simple commands at the mysql prompt

```
mysql> help [Enter]
```

```
mysql> show databases ; [Enter]
```

```
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
+-----+
3 rows in set (0.00 sec)
```

Logout of MySQL & return to Raspbian prompt

```
mysql> quit [Enter]
```

UPGRADE to MySQL 5.6 (must have 5.5 installed?)

TODO: As of 2017-03-05 this doesn't work! Until further notice, best to stick with 5.5

<http://www.debian-tutorials.com/install-mysql-server-5-6-debian-7-8/>

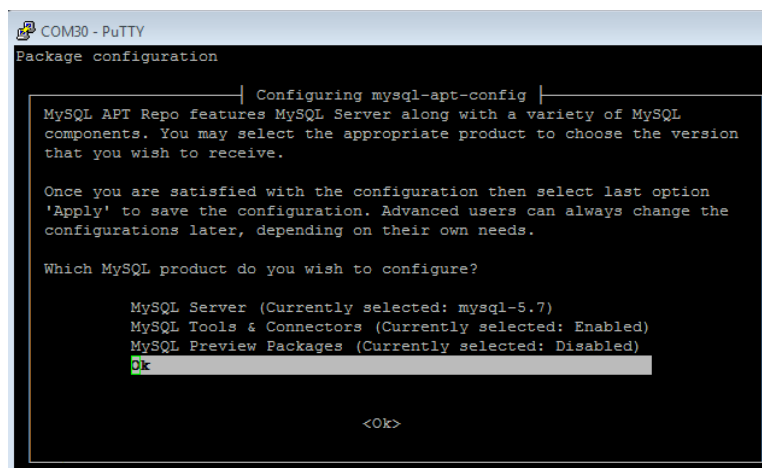
<http://dev.mysql.com/downloads/repo/apt/>

Don't know if this is needed at all, but this is one of the places MySQL files get put

```
cd /usr/share
```

```
sudo wget http://dev.mysql.com/get/mysql-apt-config_0.8.2-1_all.deb
```

```
sudo dpkg -i mysql-apt-config_0.8.2-1_all.deb
```



```
sudo apt-get update
```

```
sudo apt-get install mysql-community-server
```

Some files failed to download...

```
W: Failed to fetch http://repo.mysql.com/apt/debian/dists/jessie/InRelease
Unable to find expected entry 'mysql-apt-config/binary-armhf/Packages'...
```

following instructions below:

<http://unix.stackexchange.com/questions/192180/debian-problems-updating-mysql-5-6>

```
dpkg-reconfigure mysql-apt-config
```

```
apt-get update
```

```
apt-get dist-upgrade
```

```
apt-get install mysql-community-server
```

Still not installing, check this site:

<https://dev.mysql.com/doc/mysql-apt-repo-quick-guide/en/>

Delete the file `/etc/apt/sources.list.d/mysql.list` from your system. That removes all sources list entries for the MySQL APT repository.

Installing Apache Tomcat & TomEE:

These instructions do not “install” Apache Tomcat & TomEE, rather they are downloaded as archive files and manually launched (in root) using a startup script. To actually install as an protected autostart daemon refer to the following link:

<https://www.digitalocean.com/community/tutorials/how-to-install-apache-tomcat-8-on-ubuntu-16-04>

<http://tomee.apache.org/downloads.html>

```
~$ cd /opt
```

NOTE: The “Mavenized” releases are used in these instructions (whatever that means...)

<https://tomcat.apache.org/tomcat-7.0-doc/maven-jars.html>

```
opt/$ sudo wget
```

```
http://repo2.maven.org/maven2/org/apache/tomcat/tomcat/7.0.76/tomcat-7.0.76.tar.gz
```

```
opt/$ sudo tar xvf tomcat-7.0.76.tar.gz
```

```
opt/$ sudo wget http://repo.maven.apache.org/maven2/org/apache/tomee/apache-tomee/7.0.2/apache-tomee-7.0.2-plus.tar.gz
```

Extract the TomEE files from the archive

```
sudo tar xvf apache-tomee-7.0.2-plus.tar.gz
```

Rename the containing folder to something easier to use

```
sudo mv apache-tomee-plus-7.0.2 tomee
```

Once successfully extracted, the archive file may be deleted.

```
sudo rm apache-tomee-7.0.2-plus.tar.gz
```

Copy MySQL connector to TomEE lib (from Enterprise Java class notes):

```
sudo apt-get install libmysql-java
```

```
cd /usr/share/java
```

```
sudo cp mysql-connector-java-5.1.38.jar /opt/tomee/lib
```

OR?

```
sudo cp /usr/share/java/mysql-connector-java-5.1.39.jar /opt/tomee
```

TODO: Look into using links mysql.jar or mysql-connector-java.jar

Edit Tomcat/TomEE Management configuration /opt/tomee/conf/tomcat-users.xml

```
cd /opt/tomee/conf
```

```
sudo nano tomcat-users.xml
```

FROM:

```
<!-- Activate those lines to get access to TomEE GUI if added
      (tomee-webaccess$access) -->
<!--
<role rolename="tomee-admin" />
<user username="tomee" password="tomee" roles="tomee-admin,manager-gui" />
-->
```

TO:

Note: Removing comments around role & user tags, also advisable to change username & password from example below:

```
<!-- Activate those lines to get access to TomEE GUI if added
      (tomee-webaccess$baccess) -->
<role rolename="manager-gui" />
<user username="tomee" password="tomee" roles="manager-gui" />

CTRL-o [Enter] CTRL-x
```

Edit /opt/tomee/webapps/manager/META-INF/context.xml

```
cd /opt/tomee/webapps/manager/META-INF
sudo nano context.xml
```

FROM:

```
<Context antiResourceLocking="false" privileged="true" >
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
    allow="127\.\d+\.\d+\.\d+|:::1|0:0:0:0:0:0:0:1" />
</Context>
```

TO:

```
<Context antiResourceLocking="false" privileged="true" >
  <Valve className="org.apache.catalina.valves.RemoteAddrValve"
    allow="^.*$" />
</Context>
```

CTRL-o [Enter] CTRL-x

Launch TomEE:

```
sudo /opt/tomee/bin/startup.sh
```

```
Using CATALINA_BASE:   /opt/tomee
Using CATALINA_HOME:   /opt/tomee
Using CATALINA_TMPDIR: /opt/tomee/temp
Using JRE_HOME:        /usr
Using CLASSPATH:        /opt/tomee/bin/bootstrap.jar:/opt/tomee/bin/tomcat-
juli.jar
Tomcat started.
pi@raspberrypi:/opt/tomee/webapps/manager/META-INF$
```

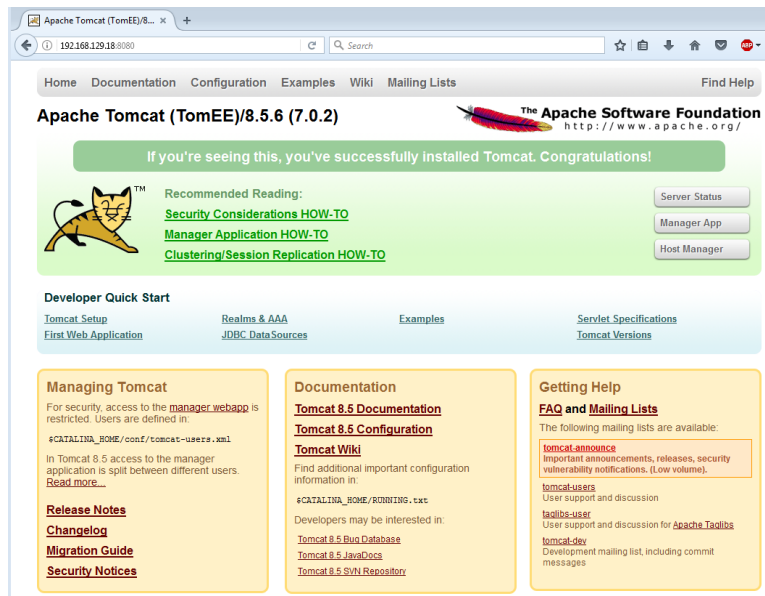
Get the current DHCP assigned IP:

```
ifconfig
```

```
eth0      Link encap:Ethernet  HWaddr b8:27:eb:9f:94:85
          inet addr:192.168.129.18  Bcast:192.168.129.255  Mask:255.255.255.0
          inet6 addr: fe80::82be:da70:186:c2d8/64  Scope:Link
```

On another computer, launch a browser ie. Firefox, and in the address enter the Raspberry Pi IP address followed by the default TomEE port :8080

192.168.129.18:8080



Saving an image of the current SD-Card for recovery or cloning:

<https://www.raspberrypi.org/forums/viewtopic.php?f=28&t=132128>
<https://www.raspberrypi.org/blog/another-update-raspbian/>

Use gparted on Ubuntu computer if resizing of partitions is needed

<https://learn.adafruit.com/resizing-raspberry-pi-boot-partition/edit-partitions>

Using an Ubuntu Linux computer, plug the SD-Card into a USB-to-SD-Card reader, or into the computer itself if it has an SD slot.

Open the command-line terminal & find the SD-Card device ID

```
sudo fdisk -l
```

Look for the device with a W95 FAT32 (LBA) partition and unmount it

```
sudo umount /dev/sddevice-letter*
```

Calculate count from fdisk output.

16G card: Count = (31116287+1) x (512 / 1048576)
= 31116288 / 2048
= 15193

4G card: Count ~ 3.6G / 1048576

TODO: Need to adjust count for SD-Card variations...

```
sudo dd bs=1M count=3752 iflag=fullblock if=/dev/sddevice-letter | tee >(md5sum  
> backfile.md5) | gzip > backfile.img.gz
```

Or if not zipping?

```
sudo dd bs=1M count=3752 iflag=fullblock if=/dev/sddevice-letter > backfile.img
```

To clone, insert formatted SD-Card

```
sudo fdisk -l
```

```
sudo umount /dev/sddrive-letter*
```

```
sudo dd if=backfile.img of=/dev/sddrive-letter bs=1M count=3000???
```

FAILED on first attempt, but ran out of destination SD-Card, tried again with 3000 count, but card may have been corrupted?

Trying direct copy to USB-to-SD-Card adapter on Raspberry Pi itself:

```
sudo fdisk -l
```

Device	Boot	Start	End	Sectors	Size	Id	Type
/dev/mmcblk0p1		8192	137215	129024	63M	c	W95 FAT32 (LBA)
/dev/mmcblk0p2		137216	7305215	7168000	3.4G	83	Linux

Disk /dev/sda: 3.7 GiB, 3904897024 bytes, 7626752 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xb2455b06

Device	Boot	Start	End	Sectors	Size	Id	Type
/dev/sda1		8192	137215	129024	63M	c	W95 FAT32 (LBA)
/dev/sda2		137216	2721791	2584576	1.2G	83	Linux

$1\text{MiB} / 512 = 2048$

$7305215 / 2048 = 3567$

Note: pre-formatted SD-Card with virgin Raspbian image using rufus on Windows

```
sudo umount /dev/sda*
```

```
sudo dd if=/dev/mmcblk0 of=/dev/sda bs=1M count=3567
```

```
pi@raspberrypi:~ $ sudo dd if=/dev/mmcblk0 of=/dev/sda bs=1M count=3567
3567+0 records in
3567+0 records out
3740270592 bytes (3.7 GB) copied, 773.18 s, 4.8 MB/s
pi@raspberrypi:~ $
```

This example worked!!!