

SSH to BeagleBone Black over USB

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Overview

In this tutorial, you will learn how to control your BeagleBone Black using SSH with just the USB lead supplied.



The BeagleBone Black is being pitched as an American (Raspberry) Pi. It has a similar feature set, including video output. However, where as the Pi is intended as a general purpose Linux machine, the BBB (as we shall call it here) is much better equipped for connecting to external electronics, with many more GPIO pins, analog inputs and fast booting into Ångström Linux.

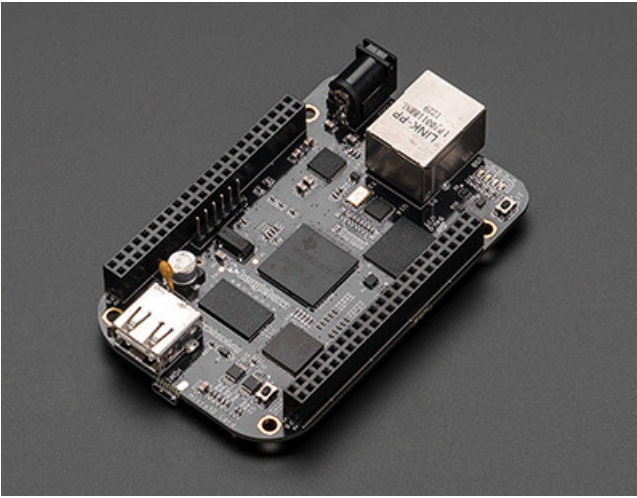
This lesson closely follows the 'Getting Started' documentation on the BeagleBone web site.

<http://beagleboard.org/Getting%20Started> (<https://adafru.it/tdq>)

You Will Need

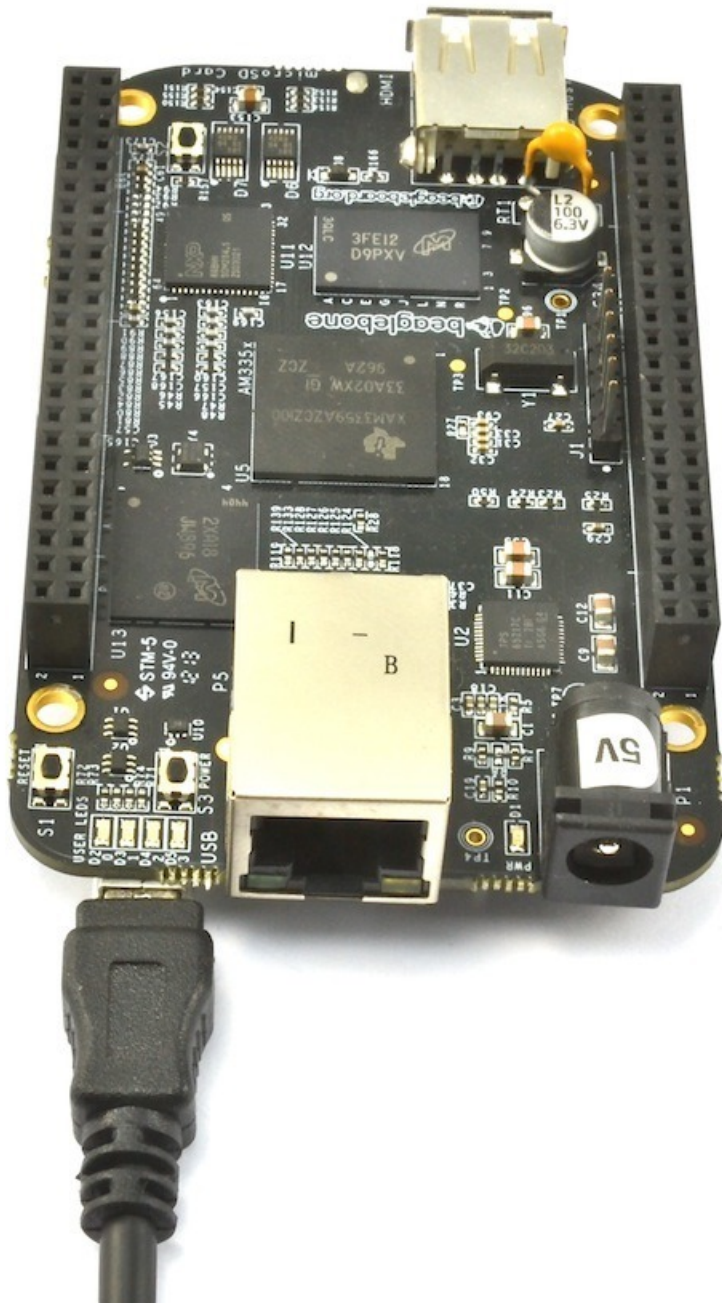
To try this out, all you need is a BeagleBone Black and the USB lead that is supplied with it, in the box.

<http://www.adafruit.com/products/1278> (<http://adafru.it/1278>)



Preparation

The BBB ships with a USB Lead. This fits into the Mini USB socket next to the RJ45 Ethernet connector.



This lead can serve the dual purpose of both supplying power to the BBB and allowing the BBB to emulate a USB modem. It is this trick that allows the BBB to be accessed as if it were networked, allowing you to communicate with it using a browser or SSH client on your computer.

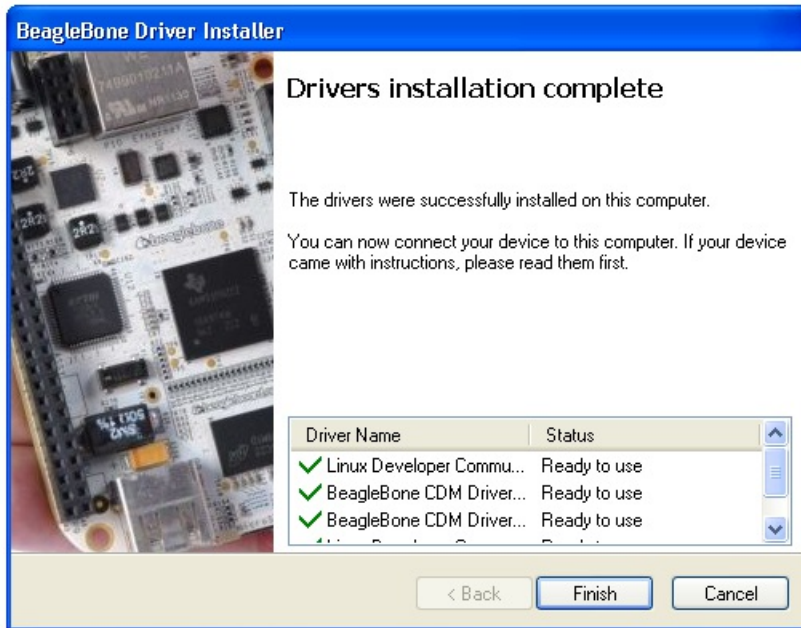
You can plug your board in now if you like. After a while, the blue LEDs should flicker and the LED nearest the edge of the board will flash in a 'heart beat' pattern.

Installing Drivers (Windows)

For the BBB to be able to do ad hoc networking with your computer, there is nothing to install on the BBB itself. Its all set up and ready to go. However, to be able to run this on a PC, you will need to install some drivers.

On Windows 64 bit, install this: http://beagleboard.org/static/Drivers/Windows/BONE_D64.exe (<https://adafru.it/cbY>)

Windows 32 bit, http://beagleboard.org/static/Drivers/Windows/BONE_DRV.exe (<https://adafru.it/cbZ>)



Windows will probably give lots of security warnings during installation.

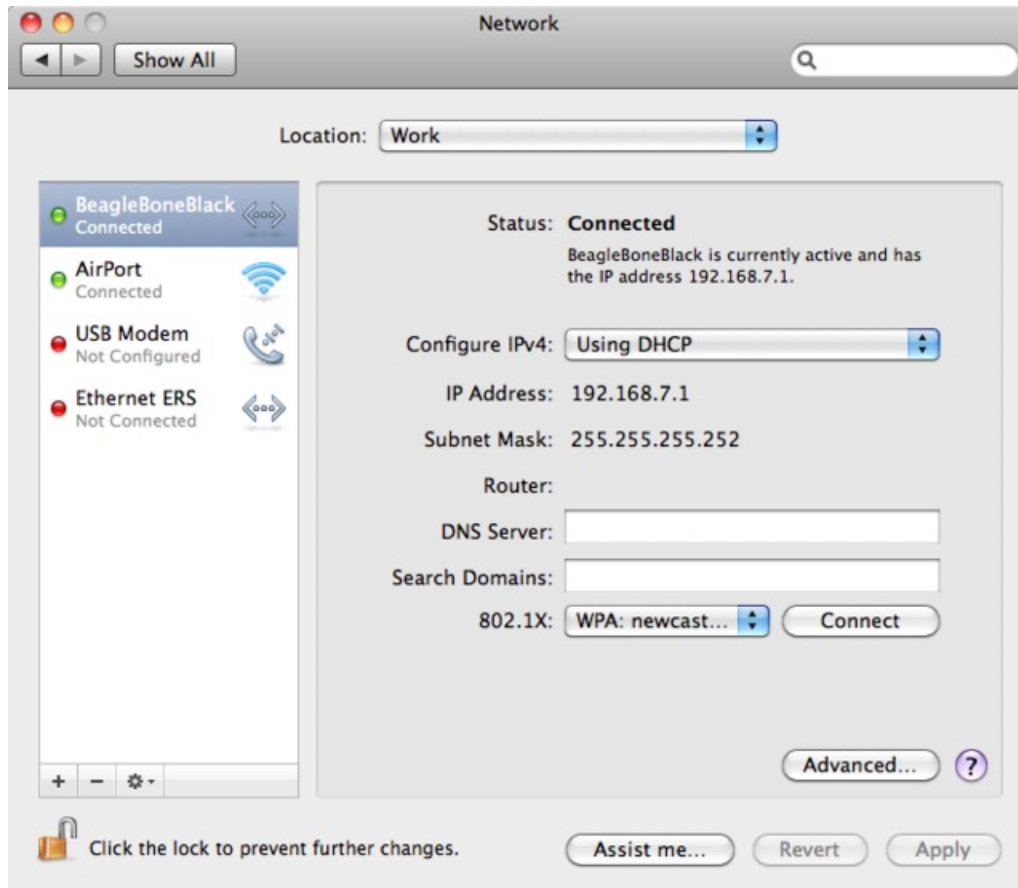
Installing Drivers (Mac)

For the BBB to be able to do ad hoc networking with your computer, there is nothing to install on the BBB itself. Its all set up and ready to go. However, to be able to run this on a Mac, you will need to install some drivers.

There are two things to install when using a Mac, the network driver which is here:

<http://beagleboard.org/static/Drivers/MacOSX/RNDIS/HoRNDIS.pkg> (<https://adafru.it/fi0>) and the serial driver which is here: http://beagleboard.org/static/Drivers/MacOSX/FTDI/FTDI_Ser.dmg (<https://adafru.it/cc1>)

Once the drivers are installed open Network from System Preferences and you should see your BBB showing up as a network connection.



Installing Drivers (Linux)

For the BBB to be able to do ad hoc networking with your computer, there is nothing to install on the BBB itself. Its all set up and ready to go. However, to be able to run this on a Linux computer, you will need to install the udev rules found here: <http://beagleboard.org/static/Drivers/Linux/FTDI/mkudevrule.sh> (<https://adafru.it/cc2>)

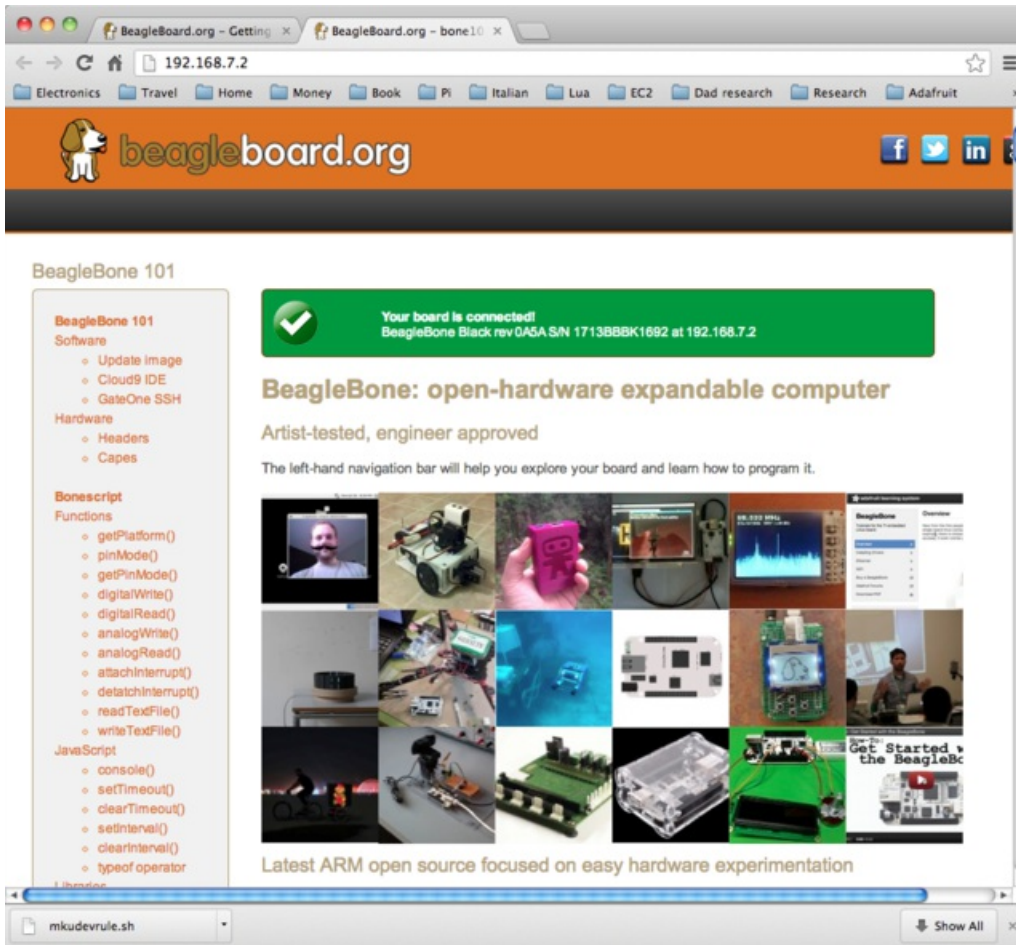
This script will create a new file called 73-beaglebone.rules in /etc/udev/rules.d/You will probably need to run the script as superuser.

Browsing Your BeagleBone

Before we connect using SSH, lets just test that the connection is active by trying to connect to the BBB with a browser.

The BBB will have an IP address, so using Chrome or Firefox (not Internet Explorer) connect to the URL <http://192.168.7.2> (<https://adafru.it/cc3>)

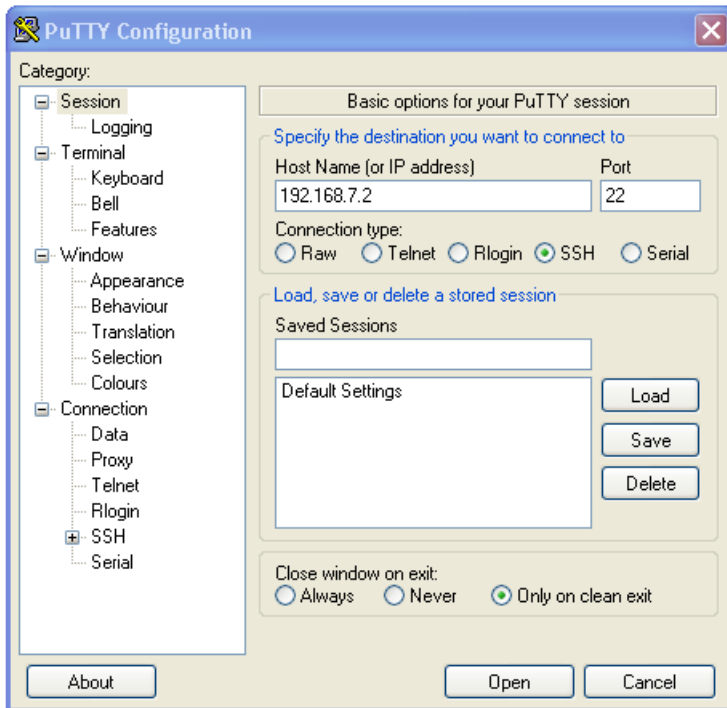
You should see a helpful introductory web page served by the BeagleBoard itself.



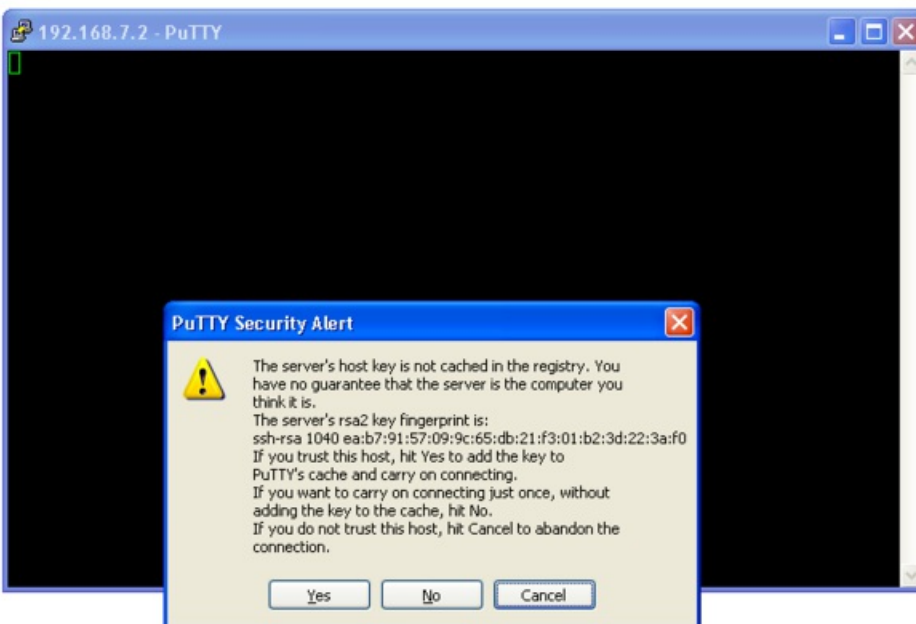
SSH with Windows and Putty

Now that we can connect to the BeagleBone, let's get a SSH session running. To do this, you will need to use a SSH client, which is no problem if you are a Linux or Max user as these are available from a Terminal window.

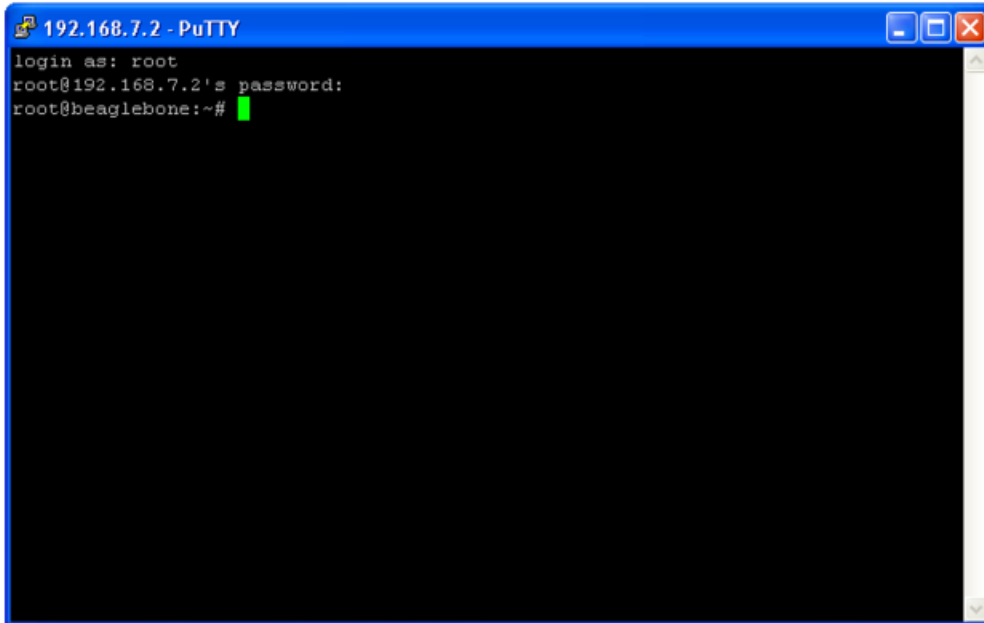
If you are a Windows user, then you will need to download Putty from here: <http://www.putty.org/> (<https://adafru.it/aUb>). Having downloaded and installed Putty (its a single file called putty.exe), run the program.



Enter the IP address 192.168.7.2 and click 'Connect'. You will then get a security warning:



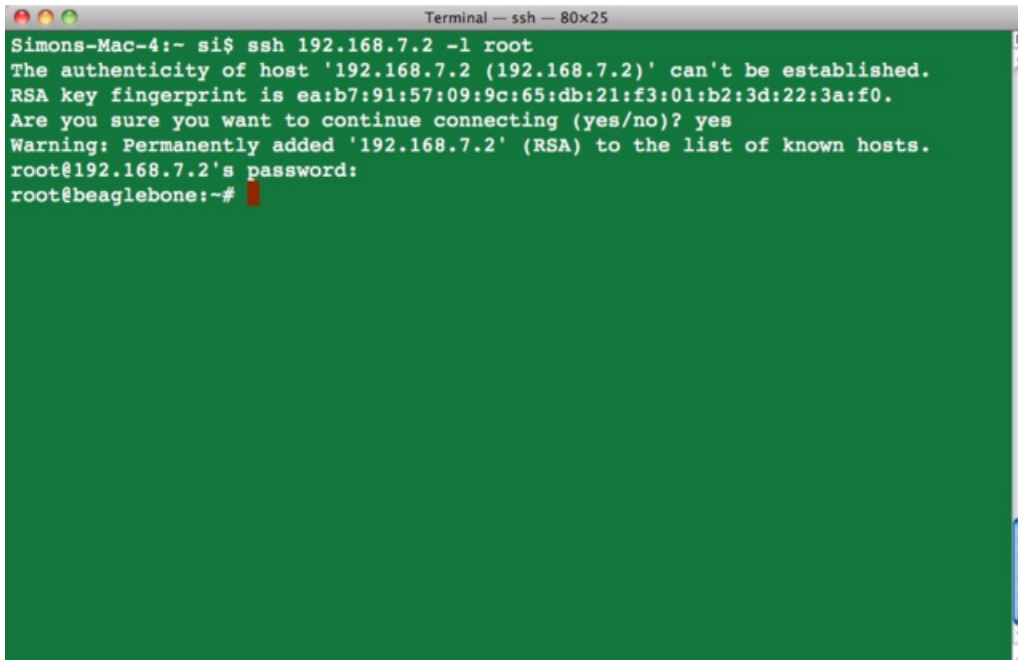
.. after which you will receive the login prompt. Log in with a username of 'root' and no password (just hit return).



SSH on Mac and Linux

If you are using a Mac or Linux, then open a terminal window and type the following command:

```
ssh 192.168.7.2 -l root
```

A screenshot of a macOS Terminal window titled "Terminal - ssh - 80x25". The terminal shows the execution of the command "ssh 192.168.7.2 -l root". The output includes an authenticity warning for the host '192.168.7.2', the RSA key fingerprint, and a confirmation prompt "Are you sure you want to continue connecting (yes/no)?". The user responds with "yes", and the terminal displays "Warning: Permanently added '192.168.7.2' (RSA) to the list of known hosts." followed by the prompt "root@192.168.7.2's password:". The user enters their password, and the terminal shows the prompt "root@beaglebone:~#" with a red cursor.

```
Simons-Mac-4:~ si$ ssh 192.168.7.2 -l root
The authenticity of host '192.168.7.2 (192.168.7.2)' can't be established.
RSA key fingerprint is ea:b7:91:57:09:9c:65:db:21:f3:01:b2:3d:22:3a:f0.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.7.2' (RSA) to the list of known hosts.
root@192.168.7.2's password:
root@beaglebone:~#
```

The first time that you log in, you will receive an authenticity warning. Type yes, to continue with the SSH session.

Next Steps

Now that you have command-line access to your BBB, you can browse the file system, install software, monitor processes etc, just as you would with the command line on any Linux computer.

About the Author.

As well as contributing lots of tutorials about Raspberry Pi, Arduino and now BeagleBone Black, Simon Monk writes books about open source hardware. You will find his books for sale [here \(https://adafru.it/caH\)](https://adafru.it/caH) at Adafruit.