



Part 12

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Activating Bluetooth

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The latest Raspberry Pi (Raspberry Pi 3) now comes with its own built in Wi-Fi and Bluetooth 4.1/Low Energy (LE) support, thanks to the BCM43438 chip.

In order to use them we must ensure that our version of is up to date. First ensure that your Raspberry Pi 3 is connected to the internet and type the following:

```
$ sudo apt-get -y update
$ sudo apt-get -y dist-upgrade
$ sudo apt-get -y install python-rpi.gpio python-pigpio
$ sudo apt-get -y install python3-rpi.gpio python3-pigpio
$ sudo apt-get -y install piclone geany usb-modeswitch
```

These step may take some time depending on the amount of updates required and the speed of your internet connection

Our next line will install the Raspberry Pi Bluetooth software, so in the terminal type

```
$ sudo apt-get -y install pi-bluetooth
```

The best method for connecting a Bluetooth device is using the `bluetoothctl` command from the common line interface. There is a GUI application called `blueman`, but this is not stable on the Raspberry Pi and will cause it to crash.

With the software now installed, go ahead and reboot your Raspberry Pi 3

```
$ sudo reboot
```

Once your Raspberry Pi has rebooted you will return to the desktop. Now in the top-right corner you should see the Bluetooth logo. If not then go to the main menu, in the top left of the screen, click on Preferences > Bluetooth Manager. The icon should now appear in the top right of the screen.

Connecting a Bluetooth Keyboard & Mouse

Follow these next steps to pair with your Bluetooth keyboard:

1. Run the Bluetooth program by typing

```
$ sudo bluetoothctl
```

2. Turn on the Bluetooth, if not already on, by typing power on.
3. Enter device discovery mode with scan on command if device is not yet listed in devices.
4. Turn the agent on with agent on.
5. Enter pair MAC Address to do the pairing between devices.
6. You maybe prompted to enter a pass code on the Bluetooth keyboard; if so, type this on the keyboard and press enter.
7. You will need to add the device to a list of trusted devices with trust MAC Address.
8. Finally, connect to your device with connect MAC Address.

Note: For a list of Bluetooth commands type help in the command line

On your keyboard or mouse, press the key combination, as given in the manual, to make your device discoverable. The set up assistant should detect the device and now you must select it from the list. You will now be prompted to create a passkey, this is a pin number that will confirm you are connecting to the correct device.

You can use any number that you wish for a keyboard, but a mouse generally has a predetermined code of 0000, 1111 or 1234. Refer to your manual for more information. Once the passkey is set click 'OK' to progress. You will be asked to enter the passkey on your keyboard to confirm the pairing.

Once paired you can now use your Bluetooth keyboard and mouse just like a typical wired setup. The Raspberry Pi will also remember the configuration each time it's booted with these devices present.

Connecting a Bluetooth Speaker

Before you get connected to your Bluetooth speaker, you will need to install Pulse Audio and its associated Bluetooth module. Pulse Audio is a sound server that receives audio input from multiple channels and filters them through to one single output or sink, as it's known. Needless to say, go ahead and install it by typing the following in the command line:

```
$ sudo apt-get install pulseaudio pulseaudio-module-bluetooth
```

Once installed give the Raspberry Pi a quick reboot to make sure everything is in order before we start:

```
$ sudo reboot
```

Now that everything we need to connect to the Bluetooth speaker is installed, you can follow these steps in order to connect. The process is the same as connecting to a Bluetooth keyboard

1. Turn on the Bluetooth speaker and enter discovery mode
2. run bluetoothctl

```
$ sudo bluetoothctl
```

3. Power on the Bluetooth device: power on
4. Turn the agent on: agent on
5. Scan for devices: scan on
6. Pair with your Bluetooth speaker pair MAC Address, at this point there should be no pass code to enter
7. Add the new Bluetooth speaker to the list of trusted devices: trust MAC Address
8. Now finally connect to the Bluetooth speaker: connect MAC Address

Now that you are connected to the Bluetooth speaker, you can test the connection by opening up the web browser and playing a YouTube video or something similar.

Disable Bluetooth and map UART1 back to UART0

To disable onboard Pi3 Bluetooth and restore UART0 over GPIOs 14 & 15 modify:

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

Add to the end of the file

```
dtoverlay=pi3-disable-bt
```

We also need to run

```
sudo systemctl disable hciuart
```

to stop BT modem trying to use UART

```
reboot
```

Cleanup packages

When you install a package, `apt-get` retrieves the needed files from the hosts listed in `/etc/apt/sources.list`, stores them in a local repository (`/var/cache/apt/archives/`), and then proceeds with installation.

In time the local repository can grow and occupy a lot of disk space. Fortunately, `apt-get` provides tools for managing its local repository: `apt-get`'s `clean` and `autoclean` methods.

`apt-get clean` removes everything except lock files from `/var/cache/apt/archives/` and `/var/cache/apt/archives/partial/`. Thus, if you need to reinstall a package `apt-get` should retrieve it again.

`apt-get autoclean` removes only package files that can no longer be downloaded.

```
$ sudo apt-get -y clean
$ sudo apt-get -y autoclean
$ sudo apt-get -y autoremove
```