# Bluetooth Low Energy

https://learn.adafruit.com/introduction-to-bluetooth-low-energy/introduction

1. A BLE feather module - a microcontroller with a built-in BLE module - Can act as a central device
2. Why is it called bluetooth low energy?

Watch the video below :

<https://youtu.be/ItV08vGqACM>

BLE and GATT for IoT : using AI-enabled [Arduino Nano 33 BLE Sense](https://store.arduino.cc/usa/nano-33-ble-sense-with-headers) board

<https://itnext.io/ble-and-gatt-for-iot-2ae658baafd5>

## Adafruit

### Bluefruit LE Python Library

#### By [Tony DiCola](https://learn.adafruit.com/users/tdicola)

#### Talk to a Bluefruit LE from a Raspberry Pi, Linux, or Mac OSX machine.

<https://learn.adafruit.com/bluefruit-le-python-library>

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| * adafruit_products_2633-00.jpg | Bluefruit LE SPI Friend If you have a stand-alone module, you have a bit of flexibility with wiring however we strongly recommend **Hardware SPI**, CS = **8**, IRQ = **7**, RST = **4**  You can use this with just about any microcontroller with 5 or 6 pins |

## Tutorials

Controlling a BLE device from Raspberry Pi - installing bluez and using “bluetoothctl” tool to interact with the BLE device

<https://www.youtube.com/watch?v=5fQR2PHMDWE>

## Bluetooth programming in C

<https://people.csail.mit.edu/albert/bluez-intro/index.html>

<https://people.csail.mit.edu/albert/bluez-intro/c404.html>

<https://github.com/edrosten/libblepp>

<https://mbientlab.com/community/discussion/1968/linux-boilerplate#latest>

https://mbientlab.com/community/discussion/2492/bluetooth-le-library-linux

## Alternatives to SPI BLE friend :

<https://www.adafruit.com/product/4516> : Adafruit Feather Sense : with M4 processor and a bunch of in-built sensors

https://learn.adafruit.com/bluetooth-le-broadcastnet-sensor-node-raspberry-pi-wifi-bridge?view=all

## Sending data from Arduino to Pi

<https://www.youtube.com/watch?v=j4-NKkep4gk>

<https://www.youtube.com/watch?v=rxExVsxI9jc&t=10s>