

# How to add a device to the UAL-IoT Wi-Fi network

The UAL IoT network is set up for devices that cannot authenticate to UAL-WiFi or eduroam because they don't support WPA Enterprise (802.1x) authentication using a username and password. Or because, like with Raspberry Pi, configuration is prohibitively complicated.

Examples include:

- Arduino
- Raspberry Pi
- NVIDIA Jetson
- AirGradient
- ESP8266/32

This network is not for general network access and web browsing. You will not be able to get a device like a Windows or Mac laptop.

Both students and staff can request access, however for students the access will remain for up to 3 years, where staff device access is permanent until the device is requested to be removed.

## How to request access

All devices have to be requested through a UAL MySupport ticket to IT.

[Click here to raise a request](#)

Once you log in, you'll be redirected to the "WiFi: Internet of Things WiFi Request" form.

- **Which site are you based at?**

This asks you to say which UAL building, for example, Peckham Road, Greencoat Building, or High Holborn.

- **Please provide a contact number**

This means a telephone number in case questions about the request or illegal activity are detected.

- **Make of Device**

Who manufactured the device, for example, Raspberry Pi or Arduino?

- **Device Model Number**

What model is it, for example, Raspberry Pi 4, or Arduino Uno Wi-Fi

- **Device MAC Address**

What is the MAC address of the device, for example, `00:00:00:00:00:00` this will often be printed on the device. (More details below)

- **What is the WiFi required for**

What do you need the Wi-Fi access for, for example: "This device will collect sensor data and upload it to an MQTT server" or "This device accesses an API to display a value on its screen".

- **Please read and agree with the UAL IoT WiFi Disclaimer**

You need to read the IoT Disclaimer, as you are responsible for any network traffic this device generates.

## How to find your device MAC address

The MAC address is the hardware address used by Wi-Fi and Ethernet devices, it is a unique address to the product you have.

In general, on a computer, you can find the MAC address in the network adapter settings, but as you are working with IoT / Physical Computing devices without graphical GUIs, you may need to do a bit more work to find it.

MAC addresses are always formatted as 6 Hexadecimal numbers most commonly delineated with a ":" (colon) but sometimes you will find a "-" (hyphen) (on Windows) or a "." (full stop/period) (on Cisco).

For example, `00:00:00:00:00:00`

## Microcontrollers

Because Microcontrollers are programmable chips integrated into many manufacturers' products, they may not always come programmed with a MAC address.

[This guide from Random Nerd tutorials may be useful to you, it applies to most if not all Arduino language devices including Arduino, ESP, and Particle products.](#)

## Arduino

Most Arduino Wi-Fi and Ethernet boards will require you to specify (make) a MAC address. This can be risky if your MAC address clashes with something else on the UAL network, but it's also extremely unlikely, so you can make something up that is unique. Just be careful if you upload the same program to 2 different Arduinos.

## ESP 8266/32 and Particle Photon

ESP and Particle boards come with a programmed MAC address you can get by print out in your setup function using `Serial.println(WiFi.macAddress());`.

## Single Board Computers

Most SBCs like Raspberry Pi do not have a MAC address printed on them, the only way around this is to boot the device and using the terminal use a command like `ifconfig` or `ip a` to get the MAC Address of the WiFi adapter. Be careful not to mix it up with the Ethernet interface.

WiFi adapters are usually labeled wlanXX while Ethernet adapters are usually labeled enoXX or ethXX.

## Other types of device

Most devices should have the MAC address printed on the packaging as well as the back of the box, so have a look for a number that looks like a MAC address.

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