

# Advanced Topics and Further Reading

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## Advanced

### DNS Captive Portal

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When using the ESP8266 in access point mode, you probably want to redirect users to the right page. You can do this by creating a captive portal, using DNS. It's basically just a DNS server that will convert all host names to the ESP's own IP address. This technique is also used by open Wi-Fi networks that redirect you to a login page before you can start browsing the internet.

### Wi-Fi configuration

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If you want to be able to change the Wi-Fi connection settings without re-uploading the code, you could take a look at the [WiFiManager library](#) by *tzapu*. This will try to connect to known networks, but if it fails, it will start a Wi-Fi access point. You can then connect to this access point, open the browser, and pick a network to connect to. The new configuration is saved.

The WiFiManager library uses a captive portal to present you with the right Wi-Fi settings page.

You could also implement a Wi-Fi manager yourself, or you can just check out the example that comes with the ESP8266 Arduino Core (Examples > DNSServer > CaptivePortalAdvanced).

### I<sup>2</sup>S

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The ESP8266 has an I<sup>2</sup>S bus on the RXD pin. It can run at 80MHz, and has DMA (direct memory access), so it's really fast. Its main purpose is to [connect an I<sup>2</sup>S DAC](#) (Digital to Analog Converter) to have an audio output, but you can use it for other things as well. For example, CNLohr managed to [transmit analog television](#), by connecting an antenna wire to the I<sup>2</sup>S pin. You can also use it to [control WS2812Bs LEDs](#). You can even use it to [communicate over Ethernet](#) (not really useful, and definitely not recommended, but it works). Another great use for the I<sup>2</sup>S bus is [outputting data to shift registers](#). This gives you extra outputs that are reasonably fast, for things like LEDs or stepper motors.

### Other examples

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You can find lots of other examples in the Arduino IDE, I'd recommend to check those out as well.

### YouTube

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There's some great channels on YouTube that do amazing things with the ESP8266. Here's a short list of the ones I'm currently following. If you've got more recommendation, just leave a comment!

- [Andreas Spiess](#)
- [CNLohr](#)
- [Acrobotic](#)
- [Miika Kurkela](#)