Developing an Open Source WLAN Driver and Stack for the ESP32

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WLAN is used by pretty much everyone, and often carries sensitive data. However, the hardware is pretty much always very locked down and limited. This means, that it can't be audited for security issues, and it is also not possible to use the hardware for researching new technologies for the next revision of the WLAN standard. The goal of this project is to develop an open source WLAN driver and WLAN stack for a specific chip called the ESP32. It is a microcontroller, that is widely used in the industry and by makers inside Internet-of-Things devices, due to its low price point and ease of use. By unlocking the capabilities of the hardware, it not only becomes possible to use it for research, but also to extend its feature set beyond the manufacturer's original intentions. Due to the open source nature of the driver and stack, it becomes possible to perform a thorough security audit of the entire software, and therefore harden the security of devices, in to which they are integrated.

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