

An Update on Espressif Solutions: From A(rduino) to Z(ephyr)

ESP-IDF and others

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ESP-IDF Releases

IDF v5.4

January 2025

- ESP32-P4 support
- ULP improvements for C6, P4
- Upgraded to GCC 14

IDF v5.5

July 2025

- ESP32-C5 and ESP32-C61 support
- ESP-TEE for C6
- LOG v2 and binary logging
- UART DMA driver
- NVS in bootloader
- std::filesystem, picolibc, IRAM optimizations
- idf_component.yml conditional dependencies

IDF v6.0

January 2026 (planned)

- New build system
- Kconfig improvements
- Storage block device framework
- Removal of legacy drivers

New chip support, peripheral drivers

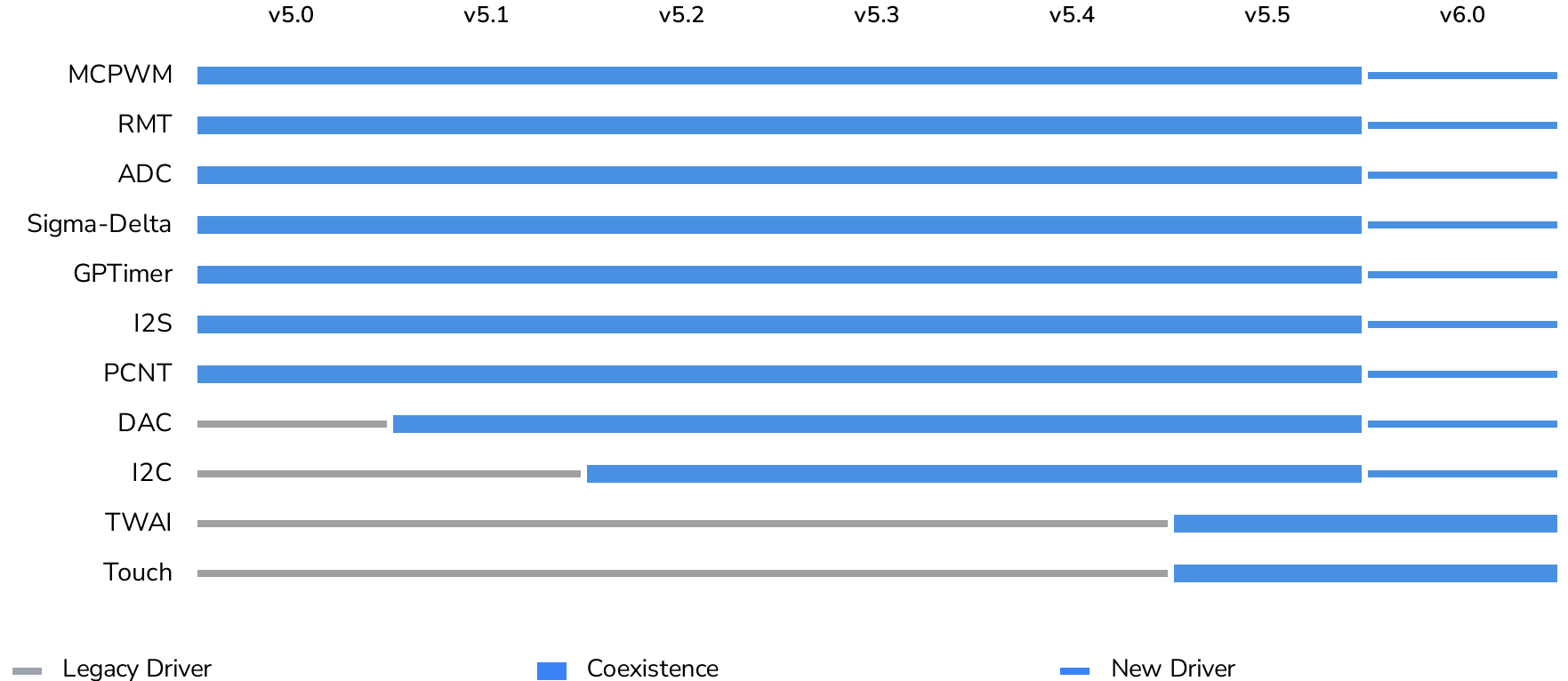
IDF v5.4

- ESP32-P4 support
- ISP subsystem drivers: LSC, demosaic, histogram, gamma, sharpen, AE, CCM, AWB
- LP drivers: LP-ADC, LP-SPI, VAD, ETM wakeup, LP-IO wakeup

IDF v5.5

- ESP32-C5 and ESP32-C61 support
- UART DMA driver
- New TWAI (CAN) and Touch drivers

Driver migration timeline



ESP Registry and component manager

Registry

API docs and
examples

Manifest

Conditional
dependencies

Component manager

Local mirroring

Lots of new
components!

> 1000
components (Jul
2025)

New components

usb_host_uvc

USB host UVC
class driver

usb_host_uac

USB host UAC
class driver

esp_lcd_st7701

And other MIPI
display drivers

thorvg

Animations library

mosquitto

MQTT broker port

libwebsockets

WebSocket library

esp_wifi_remote

Wi-Fi offloading
for ESP32-P4

esp_jrnl

Flash journaling
layer

HMI features

LVGL

New versions (9.x)

esp_lvgl_port

SIMD optimizations

Drivers

MIPI, HDMI, touch, ...

Libraries

ThorVG, FreeType, libpng,
...

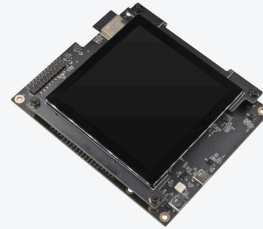
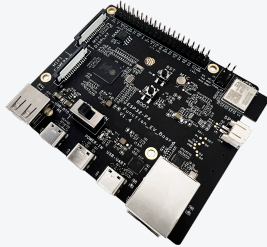
Brookesia

New HMI framework

ESP-BSP

New boards support
packages

ESP-BSP: Boards support packages



Q&A