

# Accelerate Edge Development & Prototyping on Raspberry Pi 4 with Peridio & Avocado OS

## Executive summary

The Raspberry Pi 4 remains the world’s most accessible and widely-adopted single-board computer, delivering surprising performance with its quad-core Cortex-A72 CPU, up to 8 GB RAM, and comprehensive I/O in a credit-card form factor. Perfect for rapid prototyping, proof-of-concept development, and educational applications, it’s where most embedded teams start their journey. However, moving from prototype to production-ready deployment typically requires months of custom Linux development, security hardening, and fleet management infrastructure. Peridio + Avocado OS bridge that gap:

### Production-ready development platform

Transform your Raspberry Pi 4 from hobbyist board to enterprise-grade development platform with deterministic builds, secure boot, and fleet management from day one.

### Hardware-in-the-loop workflows

Eliminate SD card flashing cycles with live code deployment and instant iteration capabilities that dramatically accelerate development cycles.

### Clear path to production

Applications built on Avocado OS for Raspberry Pi port seamlessly to industrial SoCs (NXP i.MX, NVIDIA Jetson, Qualcomm QCS) without re-architecting your software stack.

## Raspberry Pi 4 hardware highlights

Feature	Specification	Why it matters
CPU	Quad-core Cortex-A72 @ 1.8 GHz	3× faster than Pi 3; handles modern Linux workloads
Memory options	2 GB, 4 GB, or 8 GB LPDDR4	Ample headroom for computer vision and AI models
Connectivity	Gigabit Ethernet, Wi-Fi 5, Bluetooth 5.0	Production-grade networking without dongles
I/O & expansion	2× USB 3.0, 2× USB 2.0, dual micro-HDMI, CSI, DSI, 40-pin GPIO	Camera modules, sensors, and HATs ecosystem
Graphics	VideoCore VI GPU with 4K60 HEVC decode	Smooth UI rendering and hardware video acceleration
Storage	microSD + USB 3.0 boot support	Fast boot from SSD, development from SD card
Power	USB-C 5V/3A (up to 15W)	Standard USB-C power supplies and portable battery packs
Form factor	85.6 × 56.5 mm credit-card size	Fits anywhere; extensive case and mounting ecosystem
Ecosystem	Massive HAT and accessory ecosystem	Cameras, sensors, displays, industrial I/O modules
Price point	\$35–\$75 depending on RAM	Unmatched price/performance for development

# How Peridio & Avocado OS empower Raspberry Pi 4

**Turnkey BSP** – Boot a secure, deterministic image in minutes rather than configuring Yocto layers yourself.

**Unified security** – Secure boot, dm-verity and LUKS encryption come standard, ensuring consistent protection across CPU architectures.

**Long-term support** – Peridio’s managed Linux service back-ports security fixes and supplies SBOM/CVE management. Integrated with Avocado’s open-source community for sustained maintenance.

**Developer-friendly tools** – Modular SDKs and containerized workflows accelerate build, test and debug. Hot reload and hardware-in-the-loop capabilities reduce iteration time.

**Fleet & OTA** – Manage firmware, deploy model updates and monitor device health. Cohort-based phased rollouts minimize downtime.

## Business impact

### ▶▶ Time to market

Shrinks 18-month embedded projects to ~4 months.

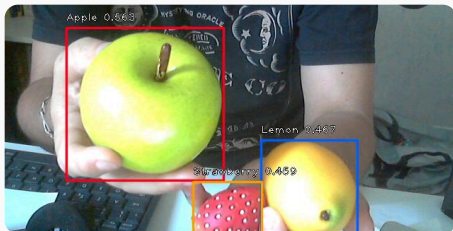
### 🏗️ Cross-platform reuse

Port Avocado OS to NVIDIA, NXP, Qualcomm and more.

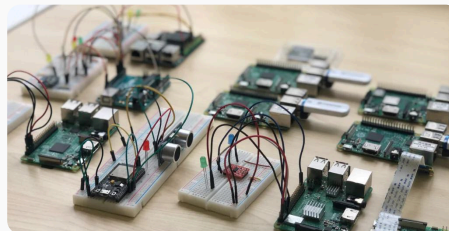
### ✓✓ Production readiness

Enterprise security, compliance, and maintainability.

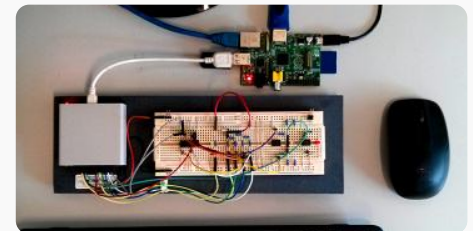
## Use-case examples



**Computer vision prototyping**  
Rapid development of camera-based applications with CSI camera modules and GPU acceleration.



**IoT gateway development**  
Prototype multi-sensor data collection and edge processing with Pi’s rich I/O, then deploy to industrial gateways with identical software stack.



**Educational & training platforms**  
Hands-on embedded Linux development with enterprise-grade tools and workflows that mirror production environments.

## Next steps

Transform your Raspberry Pi 4 from hobbyist board to enterprise development platform. Contact us for Avocado OS evaluation images or a Peridio Fleet demo to see hardware-in-the-loop development in action. **Learn more at [docs.peridio.com](https://docs.peridio.com)**

