

Unlock Industrial Vision & Edge AI on NXP i.MX 8M Plus with Peridio & Avocado OS



Executive summary

The NXP i.MX 8M Plus delivers enterprise-grade edge AI with a quad-core Cortex-A53, dedicated 2.3 TOPS NPU, and real-time Cortex-M7 core in an industrial-temperature package. Combined with Raspberry Pi's accessible form factor and ecosystem, it's perfect for smart cameras, industrial automation, and IoT gateways that demand both performance and long-term reliability. However, productizing embedded Linux systems still requires months of Yocto complexity, security hardening, and fleet management infrastructure. Peridio + Avocado OS eliminate that burden:

Production-ready Yocto runtime

Avocado OS provides deterministic builds with secure boot, dm-verity, and LUKS encryption, getting you from EVK to production in weeks, not months.

Fleet management & OTA

Peridio Fleet handles device registration, phased updates, and SBOM/CVE compliance for enterprise deployments at scale.

Cross-platform consistency

Same development stack scales across NVIDIA Jetson, Qualcomm QCS, and NXP i.MX families, protecting your R&D investment.

i.MX 8M Plus hardware highlights

Feature	Specification	Why it matters
AI performance	2.3 TOPS NPU + GPU acceleration	Real-time vision & ML inference without cloud latency
CPU	Quad Cortex-A53 @ 2.0 GHz + Cortex-M7 @ 800 MHz	Efficient Linux compute with real-time control
Dual camera support	2x MIPI CSI up to 12 MP each	Stereo vision, RGB+IR, or multi-angle capture
Memory & storage	LPDDR4 with ECC + eMMC/SD support	Industrial reliability with error correction
Connectivity & I/O	Dual GbE (TSN), USB 3.1, PCIe, CAN-FD, HDMI 2.0	Industrial networking and sensor integration
Audio/voice	HiFi 4 DSP for voice processing	On-device NLP and voice UI capabilities
Operating temp	-40 °C to +85 °C (up to +105 °C variants)	Factory floors, outdoor deployments
Longevity	10-15 year availability guarantee	Long product lifecycles without redesigns
Video acceleration	1080p60 H.265/H.264 encode/decode	Efficient streaming and storage

Takeaway: i.MX 8M Plus combines proven industrial reliability with modern AI acceleration, making it ideal for vision systems that need to operate in harsh environments for years.

How Peridio & Avocado OS empower iMX 8M Plus

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 \approx 4 months.

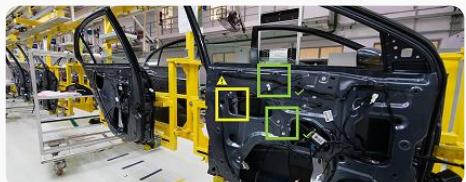
Cross-platform reuse

Port Avocado OS layers to Qualcomm, MediaTek, and more.

Lower total cost

10x faster cycles, 3x fewer engineers, no distro maintenance.

Use-case examples



Smart industrial cameras

Dual-camera stereo vision with NPU-accelerated defect detection and classification. OTA model updates eliminate field service visits.



Medical device gateways

RA-compliant edge processing with secure boot and encrypted storage. Real-time M7 core handles safety-critical sensor monitoring.



Voice-controlled automation

HiFi 4 DSP enables on-device wake word detection and NLP processing for hands-free industrial control systems.

Next steps

Peridio & Avocado OS transform i.MX 8M Plus from development kit to deployable industrial platform. Contact us for evaluation images or a Peridio Fleet demo to see how quickly you can move from prototype to production. [Learn more at docs.peridio.com](https://docs.peridio.com)

