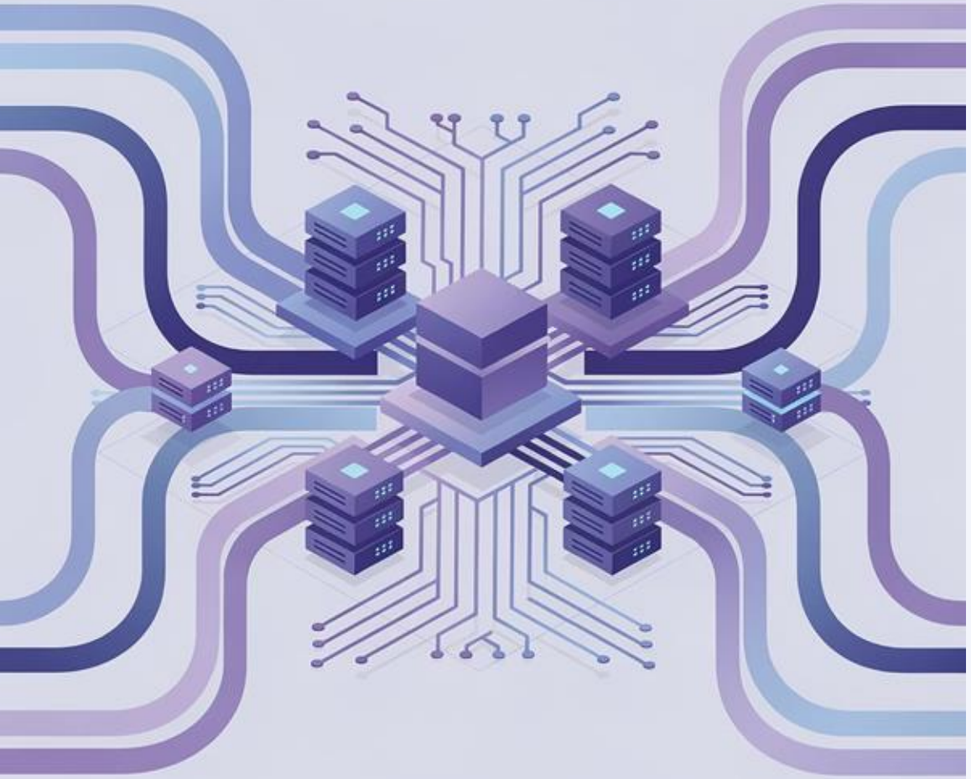

Android on Intel x86: Enterprise Android Built for Control, Longevity, & Scale

A technical briefing for Intel ecosystem partners on enterprise-grade Android deployment strategies

intel

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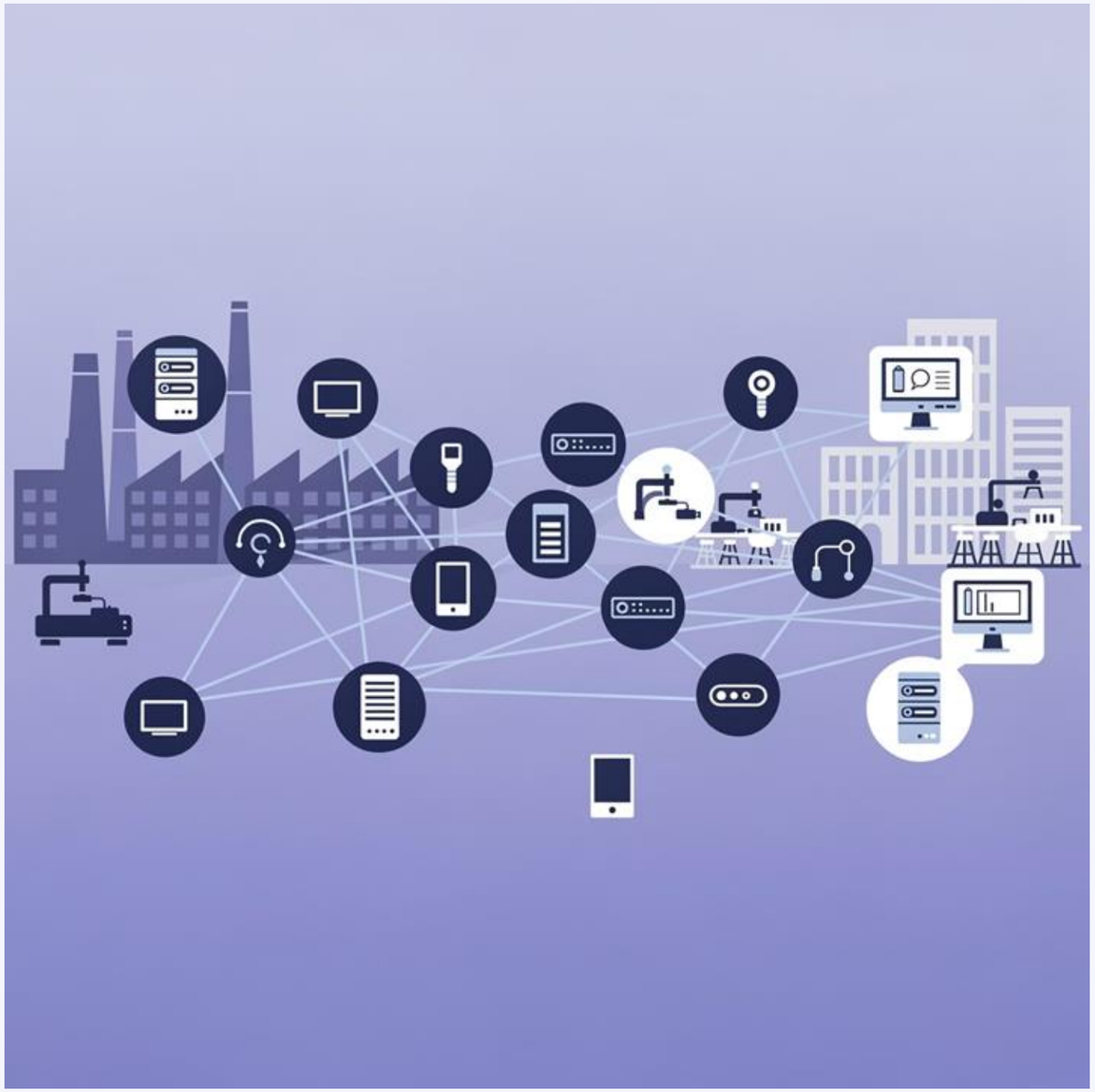
MARKET CONTEXT

Android Has Moved Beyond Mobile



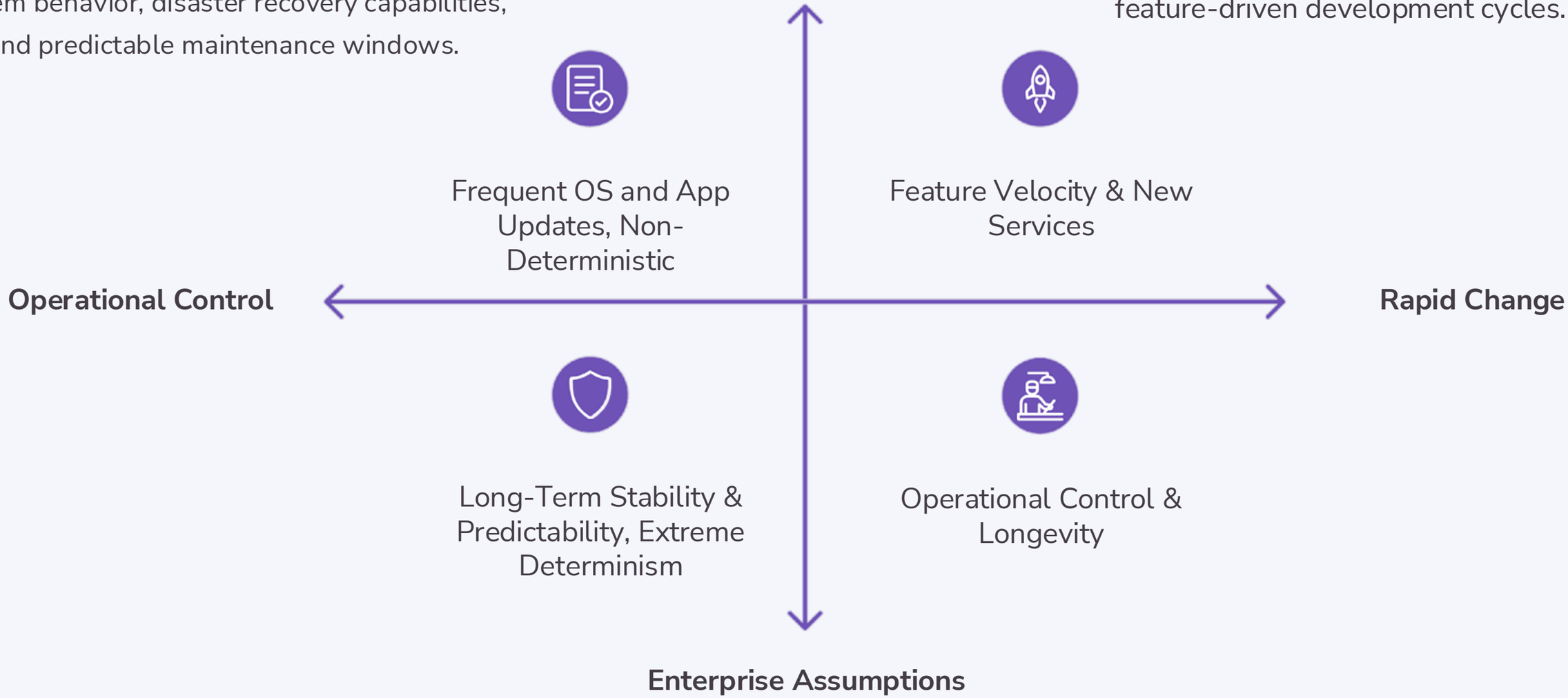
Android powers mission-critical edge infrastructure across revenue-generating verticals. Point-of-sale terminals, self-service kiosks, industrial control panels, payment systems, and purpose-built devices rely on Android as their operational foundation.

This shift from consumer mobility to enterprise infrastructure demands different architectural priorities and lifecycle management approaches.

Enterprise Edge Systems Optimize for Different Outcomes

Enterprise deployments prioritize multi-year operational stability, granular control over system behavior, disaster recovery capabilities, and predictable maintenance windows.

These requirements differ fundamentally from consumer-oriented update cadences and feature-driven development cycles.



Two Different Android Operating Models: AOSP and GMS

AOSP

Open-source Android foundation providing maximum customization, system-level control, and independence from consumer service dependencies. Optimized for purpose-built, function-locked deployments.

GMS

Licensed Google Mobile Services layer delivering standardized consumer services, Play Store ecosystem access, and managed device behavior. Optimized for user-centric devices with service integration requirements.

Both models serve valid use cases. The choice depends on deployment architecture, operational requirements, and device lifecycle expectations.

GMS Is Not Available on Intel x86

Google Mobile Services certification is not currently available for x86 platforms. This is a commercial reality, not a technical limitation. For enterprise edge deployments, this can be an advantage and not a gap.

GMS Service	Enterprise Reality	AOSP + Esper Path
Play Store	Not needed as enterprise devices run custom app stacks, not consumer apps	Esper managed app store with version pinning & staged rollouts
Google OTA (GOTA)	Consumer-cadence updates without fleet control for Enterprises can create more problems than they solve	Deterministic OTA with rollback, staged deployment, enterprise-controlled timing
Zero Touch Enrollment	Requires Google account infrastructure and intermediary portals, endpoints still require touches	True zero-touch: factory to managed fleet on first power-on
Firebase / Push Services	Consumer notification infrastructure unnecessary for single-purpose devices	Esper command & telemetry infrastructure purpose-built for fleet ops
Fused Location Provider	Most edge devices (POS, kiosks, KDS) have fixed locations	Standard Android location APIs available when needed; most deployments don't require it
GMS App Dependencies	ISV apps with GMS dependencies may need minor refactoring to support newer OS releases	Proven migration path as Esper has guided multiple ISVs through this process

Key message for customers: GMS was designed for consumer smartphones. Enterprise edge devices need purpose-built infrastructure and that's exactly what AOSP + Esper delivers on Intel x86.

What Actually Breaks in Production

Uncontrolled Firmware Updates

Upstream firmware changes deployed without validation break custom application stacks and certified device configurations

Consumer Update Assumptions

OS and component vendors default to consumer-cadence updates that assume frequent device replacement, not 5–10 year enterprise lifecycles

ODM Patch Lag

Months-long delays between security patch availability and ODM delivery create extended vulnerability windows across deployed fleets

No Clear Lifecycle Owner

Responsibility for the OS build, security maintenance, and long-term support fragments across ODM, chipset vendor, and enterprise — with no single accountable party

Refresh Cycle Misalignment

Hardware refresh timelines driven by procurement don't align with application certification cycles, forcing untested OS combinations into production

The common thread: no single entity owns the full OS lifecycle from build through end-of-life, leaving enterprises to absorb coordination failures as production outages.

Patterns That Survive 5–10 Years

Enterprise edge systems that last a decade share common architectural decisions. These patterns separate fleets still running from fleets being ripped and replaced.

Deterministic OTA with Rollback

01

Updates deploy on your schedule with verified delivery and automatic rollback on failure. No surprises, no bricked devices in the field

Controlled App Provenance & Version Pinning

02

Every application version is tracked, pinned, and deployed from a known source, eliminating drift between what's tested and what's running

Explicit OS Lifecycle Ownership

03

A single accountable party owns the OS build, security patching, and long-term maintenance. No more finger-pointing across the supply chain

Hardware Lifecycle Decoupled from OS Lifecycle

04

Device refresh cycles and OS support timelines operate independently, so hardware procurement decisions don't force premature software obsolescence

Contractual Clarity with OEM/ODM Partners

05

Defined responsibilities, SLAs, and escalation paths for every layer of the stack, from BSP delivery through end-of-life security coverage

MATURITY MODEL

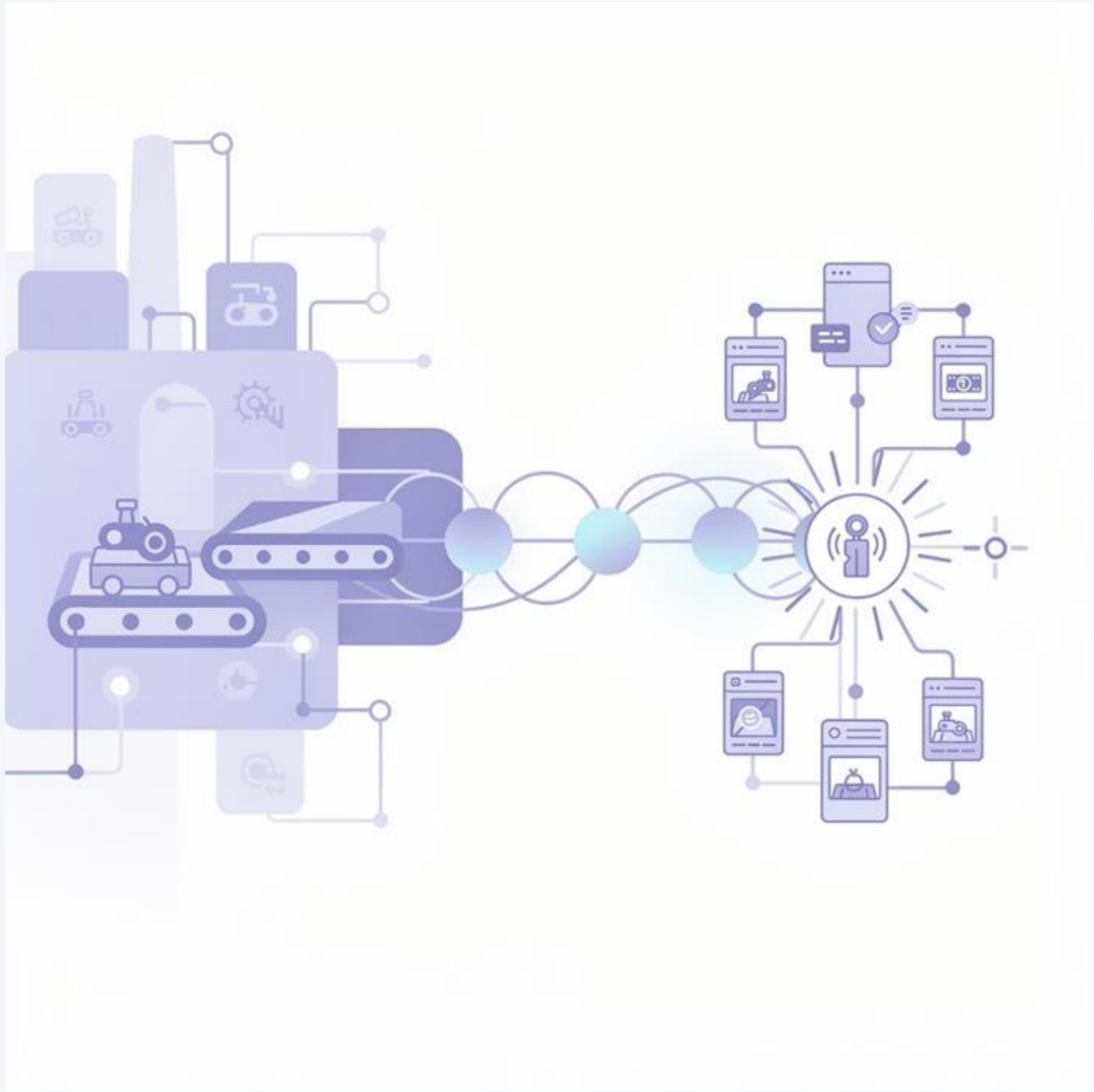
Good: Updating your Android Devices on Intel x86

Baseline enterprise viability starts with one simple requirement: you must be able to update devices safely in the field.

Esper provides the OTA infrastructure that makes this possible for AOSP-based Android on Intel x86. We build the update packages, incorporate security patches, and ensure updates are delivered and verified reliably across fleets.

We recently announced AirWave for Android, making secure OTA the foundation for scalable Android deployments on Intel platforms.

Better: Seamless Provisioning with Airwave



Ship Devices Ready to Connect

With **Esper Seamless Provisioning** devices leave the factory able to securely connect to the cloud, enroll automatically, and become fully managed without manual setup.

From day one, they can be tracked, updated, and controlled remotely. This reduces deployment time, removes configuration mistakes, and ensures every device starts in a known, consistent state.

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Seamless Provisioning by Esper

+

Esper
Airwave

Best: Purpose Built Android for Intel x86

Integrated Platform

OTA updates with rollback

Zero-touch provisioning

System recovery mechanisms

Policy & Control

Centralized enforcement

Custom SDK support

Vertical-specific extensions

Long-Term Support

Security maintenance

Extended patch cycles

Compatibility guarantees

Esper Foundation represents full-stack integration for Intel x86: a complete Android platform delivering OTA, Seamless Provisioning, recovery, policy enforcement, and sustained security maintenance. Foundation targets the highest maturity requirements for long-lived, revenue-critical deployments. It is not mandatory for all customers but provides maximum operational capability.

esper foundation

Esper: One Operational Model Across Fleets

Unified Management Plane

Single operational framework regardless of Android variant, processor architecture, or OS version

Consistent Operations Across

- AOSP and GMS Android variants
- Intel x86 and ARM processor architectures
- Mixed Android version deployments
- Heterogeneous device form factors

Organizations can evolve from Good to Better to Best maturity levels without changing operational tooling, retraining teams, or fragmenting fleet management across multiple platforms.

android

iOS

ARCHITECTURE

Architecture Aligned to Enterprise Edge Reality

Intel x86 architecture delivers performance headroom for compute-intensive edge workloads, modular hardware serviceability for in-field maintenance, and long-term Linux kernel support aligned with extended deployment cycles.

Combined with AOSP's customization capabilities, this pairing addresses the operational requirements of revenue-critical edge infrastructure: predictable performance, manageable complexity, and sustained vendor support over multi-year horizons.

Key Architectural Benefits

- Performance scaling for complex workloads
- Component-level serviceability
- Extended kernel maintenance windows
- Familiar x86 development toolchains

Esper Foundation: Platform Availability Today

Esper Foundation for Android is available today on shipping Intel platforms. Sellers can engage with confidence, this is not a roadmap item.

Twin Lake

N150 / N250 / N350

Available Now

OS: Android 15 (AOSP)

Kernel: 6.12

Use: Primary retail & POS platform

Alder Lake-N

N-series

Available Now

OS: Android 15 (AOSP)

Kernel: 6.12

Use: Cost-optimized edge & kiosk

Raptor Lake

P/U-series

Available Now

OS: Android 15 (AOSP)

Kernel: 6.12

Use: Performance edge & industrial

Android 16

In Development

Next-generation Android OS support across Intel x86 platforms — timeline TBD based on AOSP release schedule

BSP source: Intel AOSP BSPs available via Project Celadon (github.com/projectceladon). Esper Foundation layers lifecycle infrastructure on top of validated Intel BSPs.

x86 app compilation: For most Android apps, targeting x86 is a build configuration switch in Android Studio — not a rewrite. Esper provides hands-on migration support for ISVs.

What This Means for the Device Maker Ecosystem

Esper doesn't replace the OEM, instead it makes the OEM's devices more valuable. Partners who ship with enterprise lifecycle infrastructure built in aren't selling hardware. They're selling a platform.

Sell a Platform, Not a Box

Devices with managed OS lifecycle, long-term security support, and fleet infrastructure command higher margins and longer customer relationships than spec-and-price hardware

Offload OS Lifecycle Complexity

Esper owns the hard parts (OTA infrastructure, security patch backporting, provisioning, and recovery) so your support teams aren't fielding calls about broken updates

Unlock Recurring Revenue

Extended support contracts, managed services tiers, and multi-year lifecycle commitments become sellable when you have the infrastructure to deliver on them

A Differentiated Intel Stack

Intel x86 + AOSP + Esper Foundation creates an enterprise-grade proposition that ARM-based consumer Android ODMs can't easily replicate creating a genuine competitive moat

The OEM opportunity: enterprise customers aren't looking for cheaper devices, they're looking for devices they can trust for a decade. Build that trust into what you ship.

Customer Success Story: Xenial (Global Payments)

CHALLENGE

Needed to standardize tens of thousands of POS endpoints globally as they transitioned from fragmented Windows/Linux estates to an Android-first, payment-centric platform on Intel x86. Requirements included multi-year OS stability, PCI-aligned update governance, zero-touch deployment, and deterministic OTA control all without increasing operational overhead.

SOLUTION

Esper Foundation deployed on Intel-based POS platforms, enabling Android on x86 with zero-touch provisioning, controlled OTA rollouts, board-aware lifecycle management, and unified fleet control across regions. Tight coordination across silicon, BSP, and device management ensured payment-grade stability and certification alignment.

RESULT

Accelerated migration to Android on Intel with reduced field intervention, predictable OS lifecycle control aligned to refresh cycles, and elimination of downtime from OS updates. Intel-based Android POS became a scalable, payment-ready global platform.

Key Metrics

5 Figures

Devices Deployed

10 yrs

Lifecycle Commitment

"Xenial has collaborated with Esper, enhancing our customers' ability to seamlessly deploy, manage, and upgrade Xenial cloud apps. Through this partnership, we now provide a comprehensive enterprise Android platform equipped with versatile device management features. Thanks to Esper's support, clients can effortlessly deploy Xenial Apps on enterprise-grade Android OS...This empowers businesses with the flexibility to make informed decisions about future hardware upgrades, ensuring a smooth transition while optimizing their technological capabilities."

— Arjun Wadwalker, Sr. Manager of Product, Global Payments

Key Takeaways for Device Makers

1

Android at the Edge is Infra, Not Mobility

Android now powers revenue-critical systems where uptime, control, and lifecycle governance matter more than feature velocity.

2

AOSP on Intel x86 Enables Lifecycle Ownership

Control over updates, patch cadence, and OS evolution allows OEMs and enterprises to operate Android on their timeline and not a consumer roadmap.

3

Enterprise Android Requires Operational Infra

OTA, provisioning, rollback, and security maintenance are not add-ons. They are foundational capabilities for fleet-scale deployment.

4

Platform + Lifecycle Wins Long-Term Business

Intel x86 paired with mature Android lifecycle infrastructure lets device makers sell durable platforms and not short-lived hardware refreshes.

Building Android on Intel x86?

Here’s How We Start

Architecture Conversation

We align on your hardware, target vertical and use cases,, peripherals, app stack, and lifecycle requirements.

partner@esper.io

Technical Deep Dive

We validate Android fit, OTA model, provisioning strategy, and identify any driver or compatibility gaps.

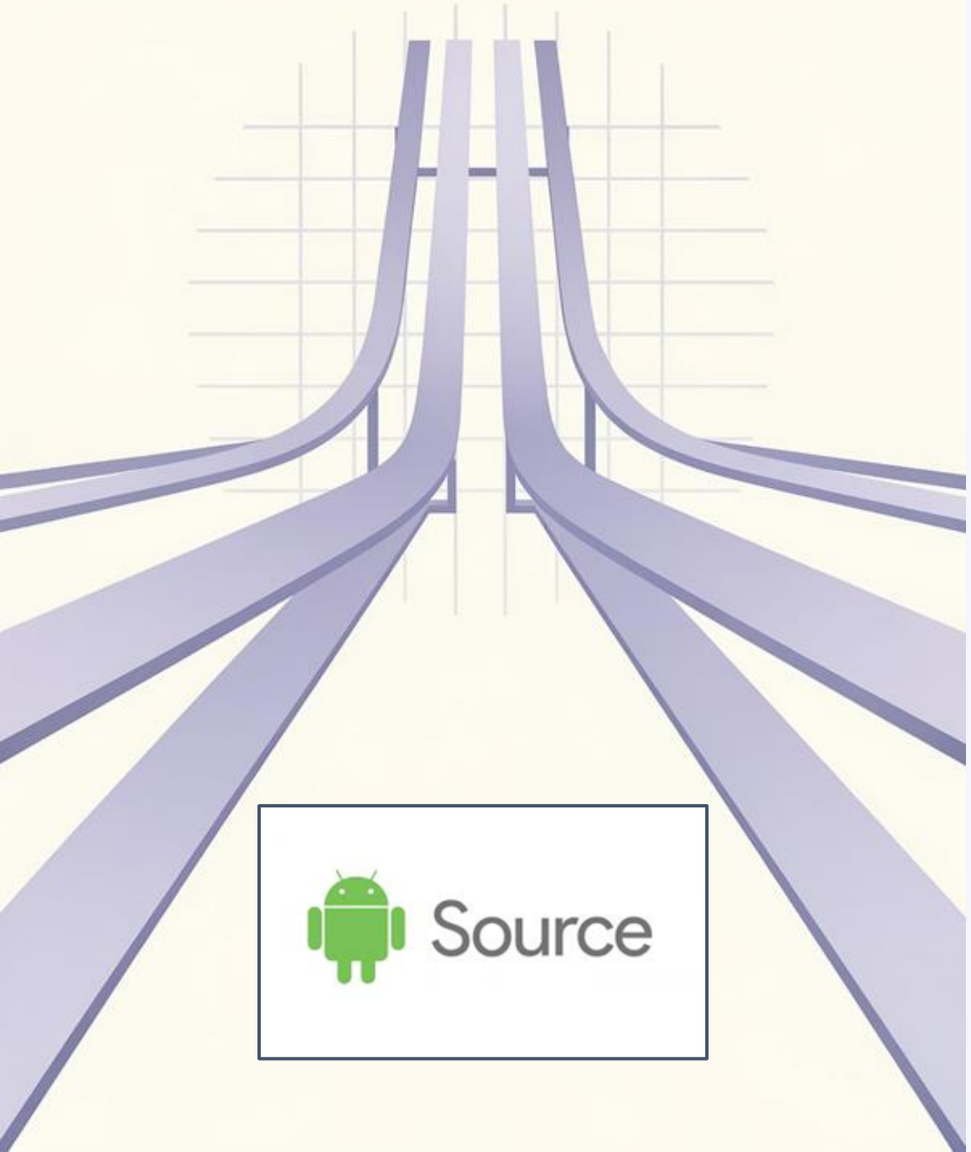
Be ready!

Roadmap & Commercial Plan

We outline the path: Airwave versus Foundation, Seamless Provisioning, timeline, responsibilities, cost envelope.

Let’s roll...

If you are building Android on Intel x86, let’s compare notes.



Building Enterprise Edge Infrastructure Together

Android on Intel x86, powered by mature lifecycle infrastructure, enables the control, longevity, and scale that enterprise edge deployments require.