Alcatel·Lucent

ALE Private 5G

Celona AerFlex

AP-Only, Cloud-Controlled Private 5G Architecture for Distributed Enterprises

Private 5G is rapidly emerging as the preferred wireless solution for enterprise AI and automation initiatives. However, traditional private 5G architectures are too complex and expensive to scale. Current designs require on-site infrastructure, and skilled IT staff—an impractical model for distributed enterprises operating across hundreds or thousands of locations.

These infrastructure-heavy solutions slow deployment, increase operational overhead, and hinder the widespread adoption of private 5G—especially in smaller, remote, or space-constrained sites where traditional IT infrastructure is limited or nonexistent.

celona

TECHNOLOGY BRIEF

Introducing Celona AerFlex

Celona AerFlex, powered by CelonaOS, is the industry's first truly cloud-controlled, access point (AP)-only private 5G architecture. It delivers the simplicity of Wi-Fi with the performance and security of cellular, enabling enterprises of any size to deploy secure, reliable wireless connectivity anywhere.

There are no on-site appliances, no racks, and no custom cabling. Celona AerFlex uses the AP as the only hardware at the site—combining local data breakout for performance with centralized cloud orchestration for scale and resiliency.

Key Considerations for Next-Gen Private 5G Deployment

Zero Infrastructure, AP-Only Simplicity

Modern enterprises need a wireless solution as simple to deploy as Wi-Fi. Eliminating the need for on-site servers, racks, and complex cabling makes private 5G truly plug-and-play.

Cloud Controlled with Local Data Breakout

Separating control and data plane functions—managing control in the cloud while keeping data local—enables both scale and performance. Local data breakout ensures low latency and compliance with data sovereignty policies.

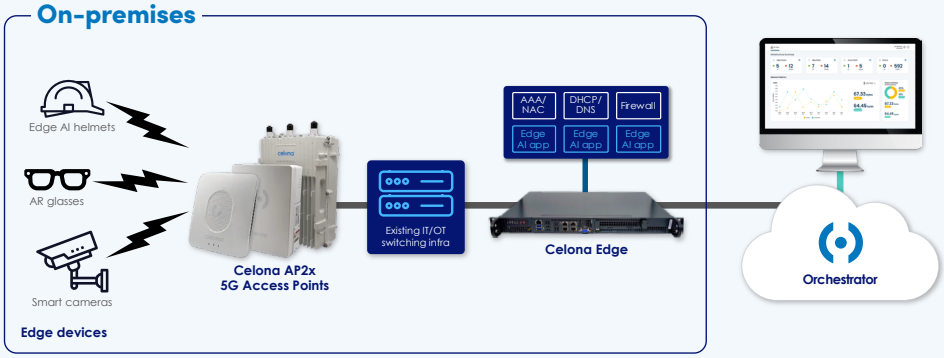
Built for Massive Distributed Scale

AI-powered applications at the edge require rapid rollout across many locations. Centralized orchestration and zero-touch provisioning ensure new sites can go live in hours—not weeks—without local IT staff.

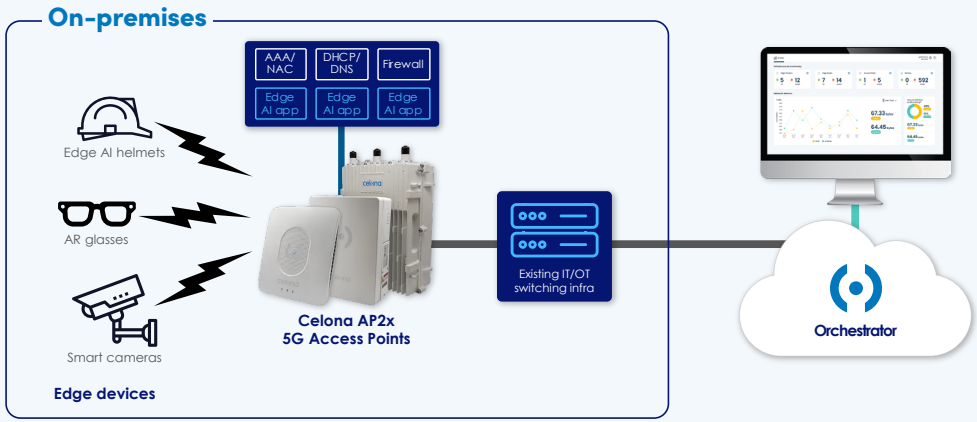
Enterprise-Ready Integration

Enterprises require seamless alignment with existing IT and OT systems. Private 5G must integrate with current security policies, identity management, and infrastructure—with no need for telco-specific skill sets.

Celona 5G LAN solution today (AP + Edge Appliance)



Celona 5G LAN with AerFlex (AP-only)



Benefits of Celona AerFlex

AP-Only Deployment

Deploy Celona 5G LAN with just the access point. No need for on-prem servers, racks, or IT closets.

Local Data Breakout

Data stays local for ultra-low latency, improved security, and regulatory compliance.

Cloud-Native Control

Centrally manage thousands of distributed sites through Celona Orchestrator.

Rapid Rollout

Deploy in hours—not weeks. Zero-touch provisioning simplifies site bring-up.

Enterprise-First Architecture

Natively integrates with enterprise IT and OT workflows, identity systems, and policy frameworks.

Single Vendor Stack

Celona delivers the full private 5G solution—hardware, software, orchestration—with a single point of accountability.

AerFlex Architecture

Celona AerFlex is not a simple "lift-and-shift" of the private 5G core to the cloud—that approach would compromise the performance and security requirements of enterprise deployments. Instead, AerFlex is a surgically re-architected system that redefines the boundary between local and cloud functions to deliver a secure, resilient, and high-performance private 5G experience with minimal on-site infrastructure.

Key Design Principle: Smart Split

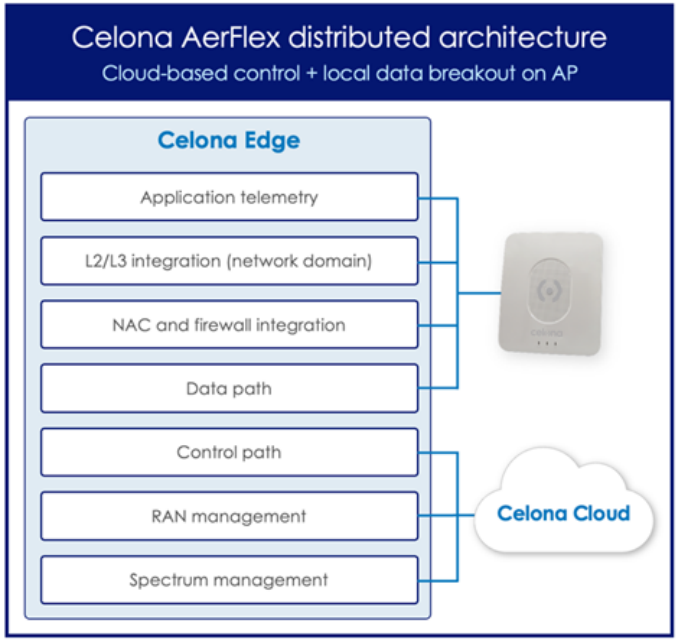
Rather than centralizing everything in the cloud, AerFlex takes a "Smart Split" approach:

Data Path Services Run Locally

Critical data path functions—like packet forwarding, segmentation, and policy enforcement—are handled directly on the Celona AP2x series hardware. This enables local traffic breakout, eliminates backhaul latency, and ensures data sovereignty and regulatory compliance.

Control Path Services Run in the Cloud

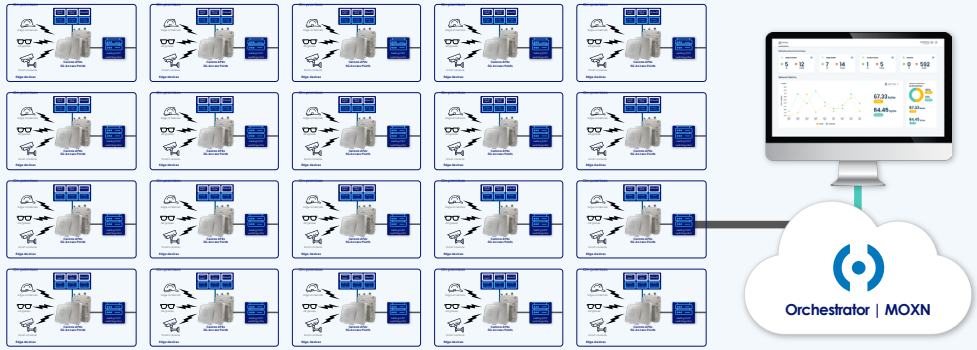
The control path, including mobility management, policy orchestration, and configuration logic, is dynamically instantiated in the nearest Celona Cloud Point-of-Presence (PoP) for scale, resilience, and efficiency.



This split ensures performance for latency-sensitive applications (e.g., robotics, video AI), while enabling centralized orchestration and Day-0 to Day-N lifecycle management via the Celona Orchestrator.

This approach is only possible because Celona owns the entire software stack—including CelonaOS, Celona Cloud, and Celona Orchestrator. That tight vertical integration allows Celona to determine what functions should be executed where (cloud vs. edge), and to tailor the experience for each enterprise use case.

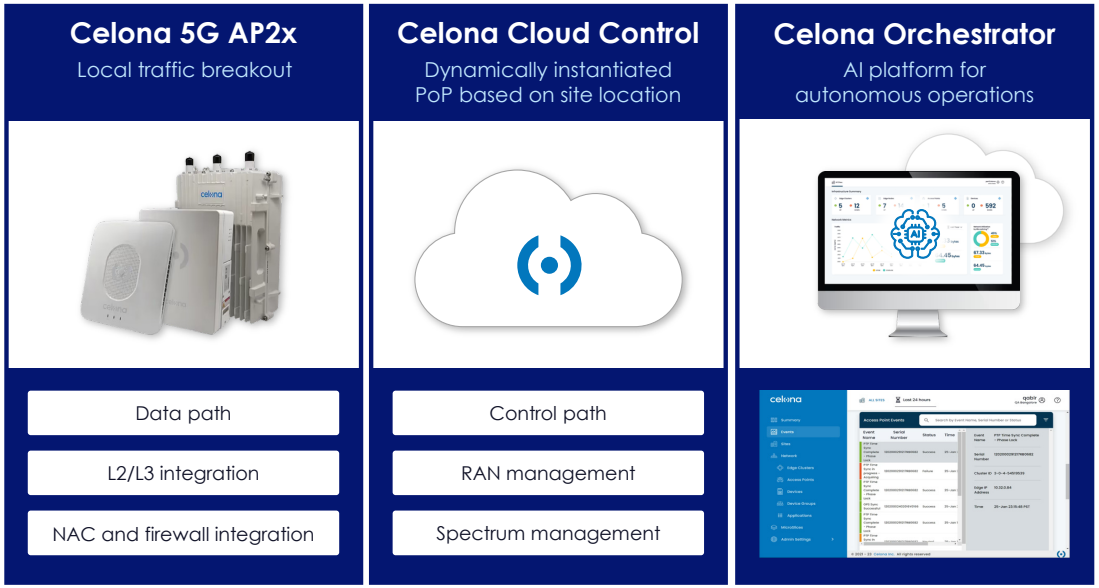
Enabling massively scalable deployments



Core Components of AerFlex

Component	Functionality
Celona 5G AP2x Series	Includes AP20, AP21, AP22 models. Hosts local data path functions. Supports L2/L3 integration, secure traffic breakout.
Celona Cloud Control	Manages core control-plane services: user authentication, RAN control, spectrum coordination. Dynamically scaled based on site geography.
Celona Orchestrator	AI-powered orchestration platform. Manages configurations, policies, software upgrades, and real-time visibility across distributed networks.

Celona AerFlex components



Deployment Modes: Flexible and Scalable

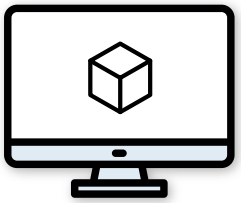
AerFlex is one of three deployment models supported by Celona's private 5G architecture:

Deployment Model	Description	Ideal Use Case
Appliance	Prepackaged Edge on-premises (1U rack)	High-speed mobility sites (e.g., logistics, manufacturing)
Virtualized	Software-based Celona Edge running on VMware ESXi	Environments with existing VM infrastructure (e.g., education, retail HQ)
AerFlex	AP-only, distributed, cloud-controlled model	Distributed, space-constrained, or remote sites (e.g., retail stores, gas stations, warehouses)

Appliance

Pre-packaged
on-premises appliance

High-speed mobility:
manufacturing, logistics,
and warehousing



Virtualized

VM-based Edge
VMware ESXi

Enterprises with on-premises
server infrastructure: big-box
retail, education

Centralized, on-premises

Celona 5G AP

AerFlex

Scalable, secure,
and compliant

Distributed enterprises: remote
offices, retail sites, and gas
stations

Distributed, cloud-based

Key Use Cases

Remote Oil Rigs

Connect edge sensors, cameras, and control systems with zero IT footprint

Warehouses & Distribution Centers

Automate material handling and robotics with resilient wireless

Retail Chains & Branch Offices

Enable consistent connectivity across hundreds of storefronts

Food & Beverage Manufacturing

Support autonomous production lines with secure, local data breakout

Pricing

Celona AerFlex offers a simple and intuitive pricing model designed to streamline private wireless deployments. A consistent add-on price per Access Point across both indoor and outdoor models ensures transparency and cost predictability for the customers. Like the base subscriptions, AerFlex add-ons are available in 3- or 5-year terms, making it simple to align with the enterprise budget cycles and long-term planning. Existing Celona customers can seamlessly upgrade their current deployments to the AerFlex model, ensuring a smooth transition and extended value over time to support evolving requirements and use cases.

Conclusion

Celona AerFlex redefines what's possible with private 5G. It brings the simplicity of Wi-Fi, the power of cellular, and the flexibility of cloud together in a single architecture. By removing the infrastructure and operational barriers that have long restricted private 5G, Celona AerFlex empowers enterprises to deploy AI-powered connectivity wherever they need it—quickly, securely, and at scale.

Deploy secure private 5G in hours—not weeks. With Celona AerFlex.

For more information visit celona.io/aerflex

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