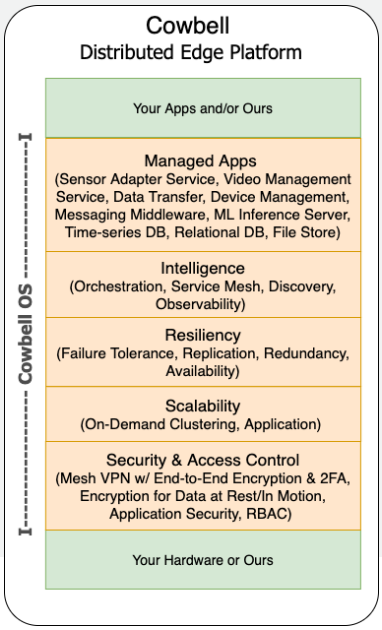
COWBELL PLATFORM

Scalable Fast-Deployable Distributed Edge Infrastructure and Platform for Managing Your Devices, Data, & Apps

Reduced Total Cost of Ownership and Improved Operational Agility through Fast Deployable Edge Infrastructure

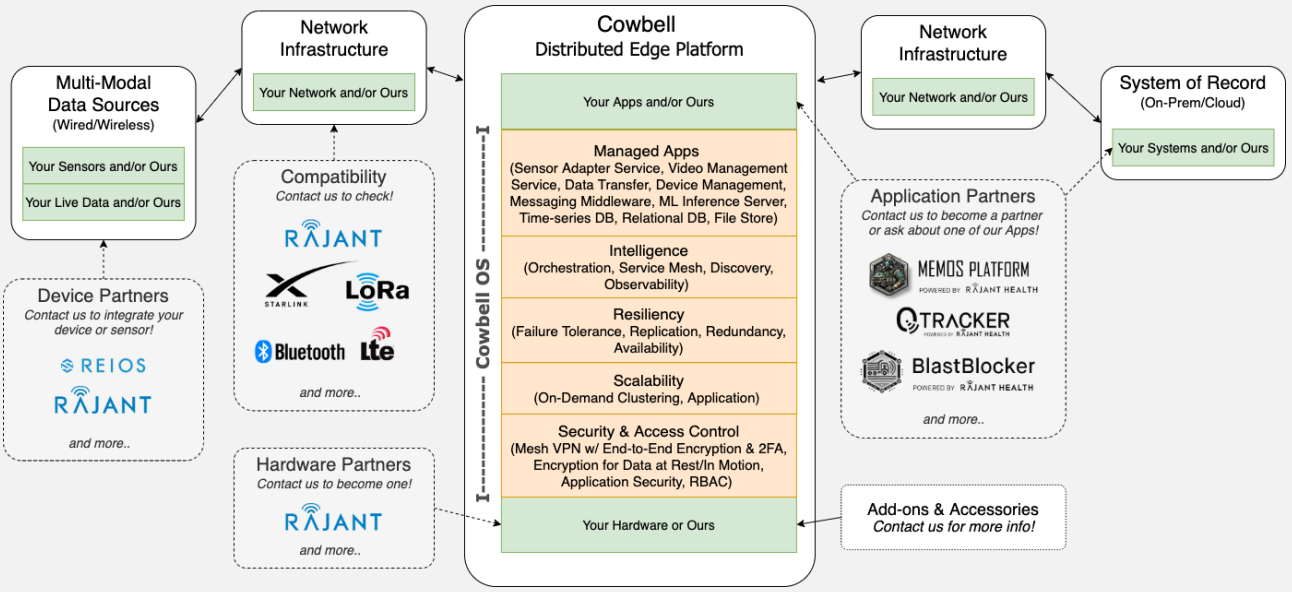
A comprehensive enterprise edge computing platform-as-a-service solution combining software, hardware, and networking infrastructure needed to streamline and simplify the delivery and management of AI and other applications at the edge while providing an ecosystem for hosting managed apps for reliable big data ingestion from many, many disparate sensors and data sources and 3rd party applications and thereby, making possible, low-latency and highly integrated edge decision support systems.



Key Differentiators

- **Unified data fabric:** Seamlessly ingests heterogeneous sensor feeds eliminating silos through standardization of data, integration, and management interfaces and accelerating integration timelines
- **Quicker data to insights:** Ingests and transforms raw data into a common operating picture for deriving actionable insights across all assets at all sites.
- **Open & extensible:** Supports the hosting of customer and 3rd-party applications, cloud integration, and customizable workflows.
- **Address customer's evolving needs** by enabling dynamic scaling in networking, compute, and functional capabilities without disruption.
- **Resilient, configurable data pipelines** that keep working even when connectivity drops — so your data is never lost and standardized for consistent use across.
- **Simplify AI deployment** so you can apply and utilize AI in production without hiring a team of engineers
- **Delivers flexibility for modern deployments** by remaining independent of specific hardware, operating systems, and networks and avoiding vendor lock-in by leveraging open-source, cloud-native technologies.
- **Reduce operational complexity** through centralized control, monitoring, and automation—minimizing reliance on scarce, highly skilled labor.
- **Federated data management capability**: combine data and insights across multiple sites while keeping each site's data secure and compliant
- **Provide a strategic partner ecosystem**—encompassing devices, hardware, networking, applications, and compliance—ensuring that innovation is not created in isolation but amplified and accelerated as a true force multiplier

*Contact **Rajant Health** to become a **certified** Cowbell Ecosystem Partner!*



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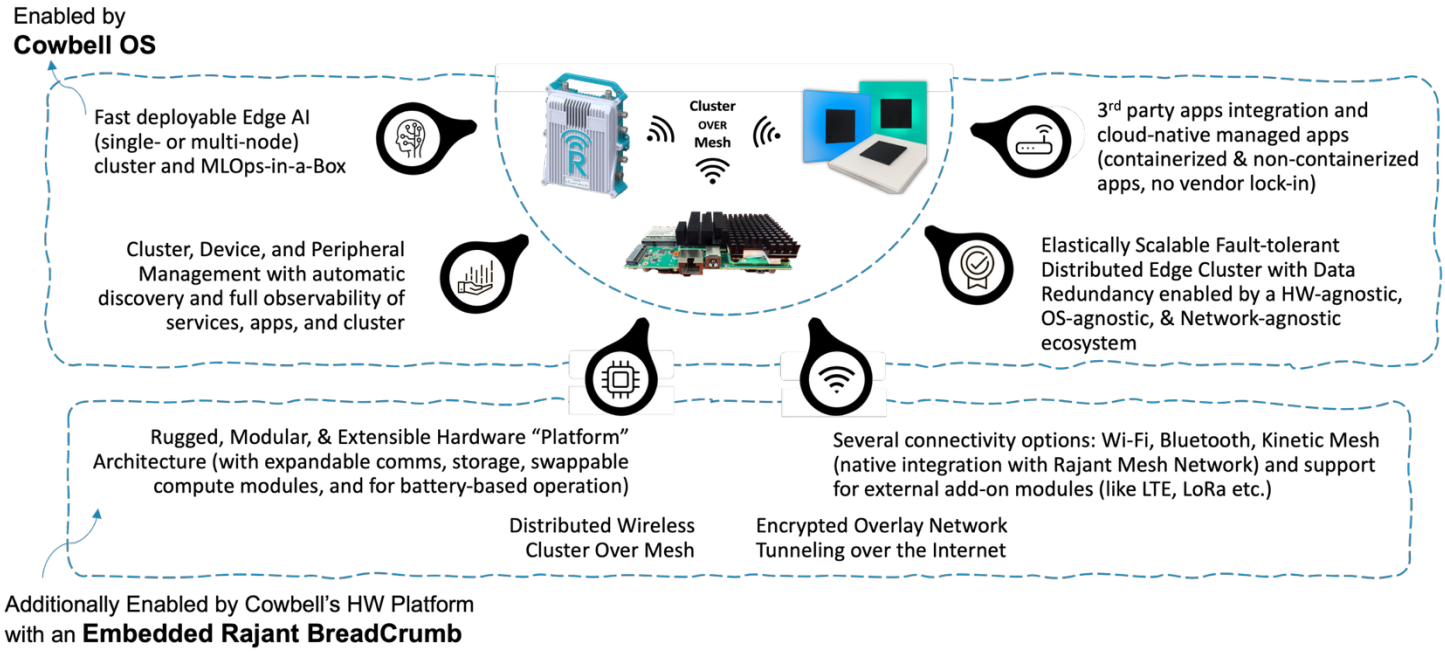
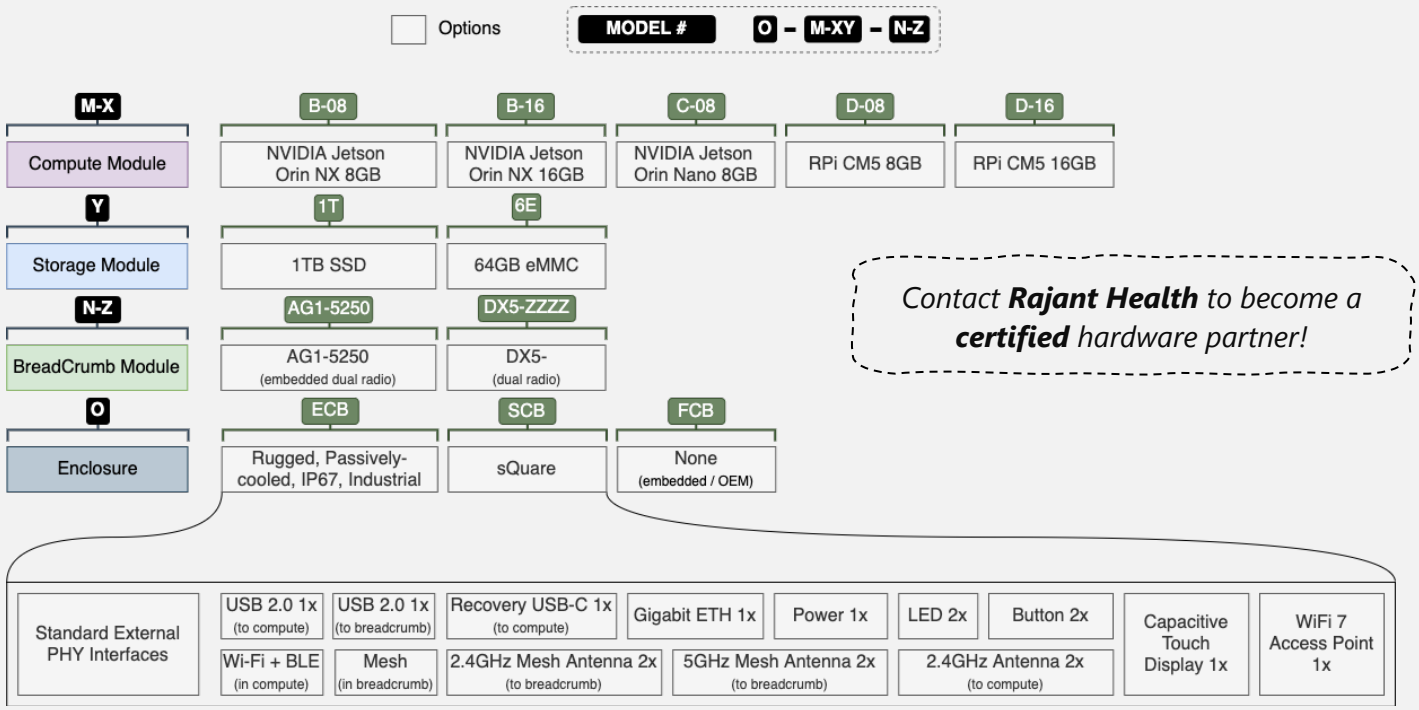
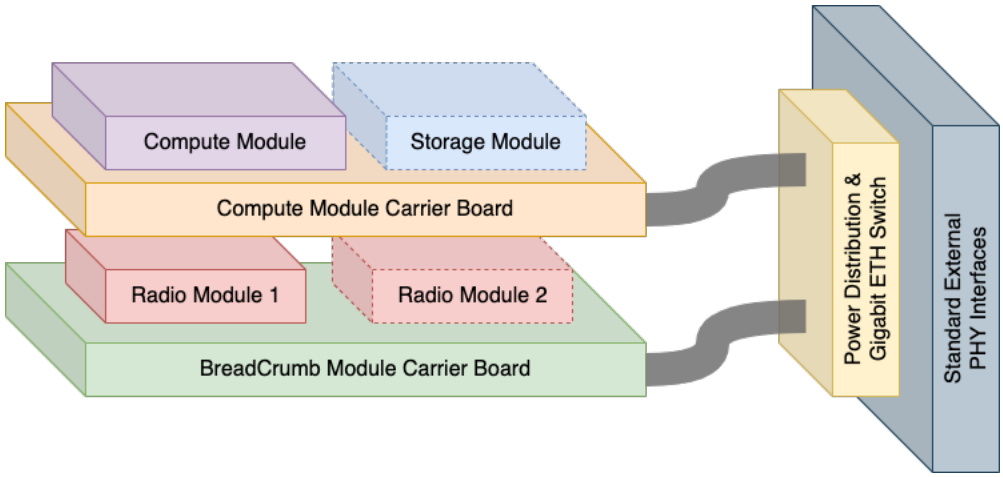
Release	Description
COWBELL-OS (ver. 1.0.0)	Production release of the Cowbell OS, aimed to deliver an enterprise edge solution for distributed edge infrastructure management, cluster setup and application management.



Cowbell is *more* than just software — it's an *extensible* edge intelligence platform delivered through *purpose-built* hardware!



Models (available[1])	Description
ECB-M[1]-XXYY[1]-AG1-5250 (**EdgeCrumb** Cowbell)	**Cowbell OS** on **Rugged IP67** hardware based on NVIDIA Jetson Orin Nano/NX or Raspberry Pi CM5 Compute Module and an AG1 BreadCrumb Module for Industrial IoT applications for Mobile or Static deployments
SCB-D-XXYY[1]-DX5-ZZZZ[1] (**sQuare** Cowbell)	**Cowbell OS** on **SWaP-C** optimized hardware based on Raspberry Pi CM5 and a DX5 BreadCrumb with an **enterprise-grade Wi-Fi 7 access point** equipped with an **Integrated Smart Light** for smart homes and hospitals
FCB-D-XXYY[1]-DX5-ZZZZ[1] (**Flying** Cowbell)	**Cowbell OS** on **SWaP-C** optimized **OEM** hardware based on Raspberry Pi CM5 and a DX5 BreadCrumb weighing **<150g** applicable for **embedment** into Drones, Robots, and Mobile Units



1 Certain customizations available upon request. Contact Rajant Health for more information.

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EdgeCrumb COWBELL

Model	Description
ECB-M[5]-XXYY[5]-AG1-5250	Passively cooled rugged IP67 hardware for Industrial IoT applications for Mobile or Static deployments based on NVIDIA Jetson Orin Nano/NX or Raspberry Pi CM5 Compute Module & an AG1 BreadCrumb applicable for indoor and/or outdoor environments ***certified*** for running **Cowbell OS**

Key Technical Specifications

Networking Platform[4]	• Wireless: BLE and Wi-Fi 5 (802.11ac) (2.4, 5 GHz) • Kinetic Mesh: Rajant AG1[1] BreadCrumb with (1) dual-band 2.4/5 GHz, 2x2 MIMO, 300/866.7 Mbps transceiver, and (1) 5 GHz, 2x2 MIMO, 866.7 Mbps transceiver • Max. RF Tx Power[2]: 25/22 dBm ± 2 dB (dual-band 2.4/5 GHz), 23 dBm ± 2 dB (5 GHz) • Antennas: (2) N-Type for dual-band 2.4/5 GHz, (2) N-Type for 5 GHz, (2) N-Type for BLE/Wi-Fi (2.4 GHz)
Computing Platform[5]	• AI Performance[3]: up to 100 TOPS • GPU[3]: NVIDIA Ampere architecture with 1024 CUDA cores and 32 Tensor Cores • CPU: up to 8-core Arm Cortex-A78AE v8.2 64-bit CPU • Memory: up to 16GB 128-bit LPDDR5 (102.4GB/s) • Storage: 64 GB eMMC or external NVMe 1TB SSD (extendable up to 120 HDD) • Operating Systems: Linux
Software Platform (when running Cowbell OS)	• Clustering: automatic discovery, creation, and scaling of a distributed computing cluster • Reliability: fault-tolerant, high-availability, with data redundancy • Operations: MLOps-in-a-Box for simplified delivery and management of AI and other applications • Management: Device, Cluster, Peripheral, and Applications management with integrated UI
Power	• DC Power: 12 – 28 VDC • Power Consumption[4]: 25W (typical); 50W (max) @ 12 VDC
Input/Output	• Ethernet: 10/100/1000 M12 • DC Input PWR: Threaded power jack panel-mount connector, Current Rating: 5 Amps • Field Accessible: (1) HDMI 2.0, (1) USB 3.1 Type-A (Compute), (1) USB 2.0 Type-A (BreadCrumb) • Buttons and LEDs: (2) Buttons, (1) Status LED (Compute), (1) Status LED (BreadCrumb)
Extensions (available upon request)	• Wireless: LTE/5G/LoRa Connectivity by extension sockets • Mass Storage: external NVMe up to 120 HDD by extension sockets • Security: RiSM Integration
Physical	• Dimensions: 281 x 214 x 76 mm • Cooling: Passive Cooling • Weight: 2.99 Kg • IP Rating: IP67 • Ambient Temperature: -20 C … +60 C (Operating), -40 C … +85 C (Storage) • Humidity: 0 to 95% RH (not verified) • Shock and Vibration: (not verified)
Compliance	• FCC (US) (pending) • IC (Canada) (pending) • CE Red (pending)

1 Channel, frequency and bandwidth options vary based upon regional and local regulations and certifications.
2 RF transmit power is governed by local regulations and varies by frequency.
3 Available on NVIDIA-based compute modules only. Contact Rajant Health for more information.
4 Power consumption depends on transceiver and compute configuration.
5 Certain customizations available upon request. Contact Rajant Health for more information.

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20+ Years OF GAME-CHANGING WIRELESS

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Enabling Industrial AI

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sQuare COWBELL

Model	Description
SCB-D-XXYY[4]-DX5-ZZZZ[4]	Actively cooled **SWaP-C** optimized hardware with an **enterprise-grade Wi-Fi 7 access point** equipped with an **Integrated Smart Light** based on Raspberry Pi CM5 based Compute Module and a DX5 BreadCrumb applicable for indoor environments like in smart homes and hospitals and is ***certified*** for running the **Cowbell OS**

Key Technical Specifications	
Networking Platform[4]	• Wireless: BLE and Wi-Fi 5 (802.11ac) (2.4, 5 GHz) • Kinetic Mesh: Rajant DX5[1] BreadCrumb with (1) 2.4 GHz 2x2 MIMO 300 Mbps transceiver, or (1) 5 GHz 2x2 MIMO, 420 Mbps transceiver • Max. RF Tx Power[2]: TBD, Antennas: TBD
Computing Platform[4]	• CPU: Broadcom BCM2712 quad-core 64-bit Arm Cortex-A76 (Armv8) SoC @ 2.4GHz • Memory: up to 16GB LPDDR4 • Storage: 64 GB eMMC and/or external NVMe 1TB SSD • Operating Systems: Linux
Software Platform (when running Cowbell OS)	• Clustering: automatic discovery, creation, and scaling of a distributed computing cluster • Reliability: fault-tolerant, high-availability, with data redundancy • Operations: MLOps-in-a-Box for simplified delivery and management of AI and other applications • Management: Device, Cluster, Peripheral, and Applications management with integrated UI
Power	• DC Power: 12 – 24 VDC • Power Consumption[3]: 25W (typical); TBD (max) @ 12 VDC
Input/Output	• Ethernet: 10/100/1000 RJ45 • DC Input PWR: Power jack panel-mount connector, Current Rating: 5 Amps • Display: Capacitive Touch Display (Size: TBD) • Field Accessible: (1) USB 3.2 Type-C, (1) USB 3.1 Type-A (Compute), (1) USB 2.0 Type-A (BreadCrumb) • Buttons and LEDs: (2) Buttons, (1) Status LED (Compute), (1) Status LED (BreadCrumb) • Smart Light: 12 dots LED strip WS2812B for Wi-Fi and IoT status and alerting, PMMA transparent laser dotting panel
Extensions (available upon request)	• Wireless: LTE/5G/LoRa Connectivity by extension sockets • Access Point: Additional AP based on Kiwi Wi-Fi 7 SoM (802.11 a/b/g/n/ac/ax/be) • Mass Storage: external NVMe using extension sockets • Security: RiSM Integration
Physical	• Dimensions: 180 x 180 x 40 mm • Cooling: Active Cooling • Weight: 500g (approx.) • IP Rating: IP20 (not verified) • Ambient Temperature: -10 C … +50 C (Operating, not verified) • Humidity: 0 to 95% RH (not verified)
Compliance	• FCC (US) (pending) • IC (Canada) (pending) • CE Red (pending)

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Flying COWBELL

Model	Description
FCB-D-XXYY[4]-DX5-ZZZZ[4]	**SWaP-C** optimized **OEM** hardware weighing **<150g** based on Raspberry Pi CM5 based Compute Module and a DX5 BreadCrumb module applicable for **embedment** into drones, robots & other mobile or static platforms & is ***certified*** for running the **Cowbell OS**

Key Technical Specifications

Networking Platform[4]	• Wireless: BLE and Wi-Fi 5 (802.11ac) (2.4, 5 GHz) • Kinetic Mesh: Rajant DX5[1] BreadCrumb with (1) 2.4 GHz 2x2 MIMO 300 Mbps transceiver, or (1) 5 GHz 2x2 MIMO, 420 Mbps transceiver • Max. RF Tx Power[2]: TBD • Antennas: TBD
Computing Platform[4]	• CPU: Broadcom BCM2712 quad-core 64-bit Arm Cortex-A76 (Armv8) SoC @ 2.4GHz • Memory: up to 16GB LPDDR4 • Storage: 64 GB eMMC and/or external NVMe 1TB SSD • Operating Systems: Linux
Software Platform (when running Cowbell OS)	• Clustering: automatic discovery, creation, and scaling of a distributed computing cluster • Reliability: fault-tolerant, high-availability, with data redundancy • Operations: MLOps-in-a-Box for simplified delivery and management of AI and other applications • Management: Device, Cluster, Peripheral, and Applications management with integrated UI
Power	• DC Power: 12 – 24 VDC • Power Consumption[3]: 25W (typical); TBD (max) @ 12 VDC
Input/Output	• Ethernet: 10/100/1000 RJ45 • DC Input PWR: Power jack panel-mount connector, Current Rating: 5 Amps • Display: Capacitive Touch Display • Field Accessible: TBD
Extensions (available upon request)	• Wireless: LTE/5G/LoRa Connectivity by extension sockets • Access Point: Additional AP based on Kiwi Wi-Fi 7 SoM (802.11 a/b/g/n/ac/ax/be) • Mass Storage: external NVMe using extension sockets • Security: RiSM Integration
Physical	• Dimensions: 115 x 60 mm • Weight: 47g (without heatsinks), 132g (with heatsinks) • Ambient Temperature: -10 C … +50 C (Operating, not verified) • Humidity: 0 to 95% RH (not verified)
Compliance	• FCC (US) (pending) • IC (Canada) (pending) • CE Red (pending)

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