

ELEVATING THE SWARM

Ultra-Reliable, Low-Latency Dynamic Mesh
Networks Powered by Meshmerize

Wi-Fi-based systems fail early when their assumptions break under range, interference, and mixed traffic.

Meshmerize adds direct control over critical link behavior, then builds traffic policy, reliability, and mesh scale on that foundation.

THE HARDWARE PLATFORM: 8DEVICES ROBONODE-M VS. MACA2-M

Meshmerize software integrates seamlessly as a lightweight Layer 2 virtual ethernet routing engine across OpenWRT and Linux-driven architectures. Deploy standalone or combine diverse nodes into a unified hybrid network mapping to specific vehicle dynamics:



Robonode-M (108.5mm)



Maca2-M (73mm)

Feature	Robonode-M	Maca2-M
Form Factor & Weight	Ultra-compact (108.5 x 73.5 x 20 mm) 178g	Micro-payload (73 x 47 x 23 mm) 74g
Transmit Power	1W	8W (High-Penetration)
Operational Range	Up to 20 km	Up to 80 km
Max Throughput	Up to 300 Mbps	Up to 80 Mbps
Channel Sizes	5 / 10 / 20 / 40 / 80 / 160 MHz	1.5 MHz to 19.5 MHz
Frequency Flexibility	Multi-band (2.3–3.1 GHz / 4.5–6.6 GHz / 5.3–7.4 GHz)	Single-band (2152 – 2852 MHz)
Environmental Rating	-45°C to 75°C*	-40°C to +85°C*

Tailor Your Swarm: Deploy the featherlight Maca2-M on smaller scout drones to achieve up to 80km range with 8W punchy penetration or utilize the Robonode-M on flagship nodes to handle high-bandwidth multi-stream video routing up to 300 Mbps.

CORE MESHMERIZE BENEFITS

Efficient Performance

Built to operate directly in Kernel Mode, Meshmerize ensures exceptionally low processor impact. This lightweight architecture translates into maximum throughput and near-zero latency, preserving your drone's onboard computing power for flight telemetry and payload operations.

ARQ / Loss Recovery

Meshmerize features a highly configurable Automatic Repeat reQuest (ARQ) mechanism. By intelligently managing packet loss recovery at the mesh layer, it allows wireless links to safely maintain more aggressive, high-speed data rates even over volatile wireless paths.

Stream Handling & Prioritization

Network traffic is intelligently split into isolated, logical streams (e.g., critical flight control, telemetry data, and payload video). Each stream is assigned its own priority and latency behavior, ensuring vital command data never gets choked by heavy video feeds.

Optimized Broadcast Mode

To preserve precious network bandwidth, Meshmerize limits broadcast overhead. By controlling transmissions strictly through modulation constraints and designated hop limits, the system dictates exactly which nodes receive packets, preventing network-throttling "echo chambers."

Packet Aggregation

Small, fragmented data packets (such as rapid GPS and coordinate updates) are dynamically bundled together into single, full-sized 1500-byte frames. This drastically reduces packet header overhead and optimizes total airtime efficiency.

Custom UI

An intuitive, dedicated user interface gives operators real-time visual insights into the mesh topology. Monitor link quality, track node paths, and configure swarm networking parameters on the fly through a tailored, user-friendly dashboard.