PRODUCT SPECIFICATION

YNW-5800

Intelligent Ad-Hoc MESH Wireless Transmission Equipment

Shenzhen Yuneng Micro Technology Co., Ltd.

2026.5 (V1.0)

Model	YNW-5800
Product Name	Intelligent Ad-Hoc MESH Wireless Transmission Equipment
Series	YNW-5800 Series MESH Intelligent Ad-Hoc Equipment
Core Technology	IEEE802.11 a/b/g/n · Dual-band Multi-module · MESH Intelligent Ad-Hoc Network

Intelligent Ad-Hoc

1. Product Overview

> **Product Positioning:** The YNW-5800 series is an enterprise- and carrier-grade outdoor MESH wireless intelligent networking device based on the IEEE802.11 a/b/g/n standard, featuring a 2.4GHz and 5GHz dual-band, multi-module design. It provides wireless system integrators with PtP (Point-to-Point) / PtMP (Point-to-Multipoint) / Hotzone wireless coverage architectures, enabling users to rapidly deploy reliable wireless transmission networks in complex environments with flexible and efficient solutions.

The YNW-5800 series is the latest MESH intelligent Ad-Hoc wireless transmission product developed by our company. With powerful performance, this series supports multiple communication combinations to suit different application scenarios. It can be installed at fixed points or rapidly deployed on moving vehicles, vessels, personnel, robots, and other mobile locations. The product integrates base station (BS) communications, client (CP) communications, point-to-point communications, as well as a powerful MESH Ad-Hoc capability and automatic roaming function, distinguishing it from most conventional MESH Ad-Hoc devices on the market.

Based on an advanced MESH design philosophy, the device does not require a central gateway when forming a network — any unit can self-organize into a network. Should any device within a group go offline, other devices within effective antenna coverage will automatically continue communications to ensure the network never drops. In practical applications, a ring network topology can be adopted without worrying about ring-network congestion. Moreover, in addition to the wireless MESH function, the device's two wired Ethernet ports also support MESH operation, allowing flexible selection according to actual deployment requirements. The multi-mode MESH design also provides redundancy to guarantee better link quality in complex environments.

The YNW-5800 series supports up to a dual-module design, accommodating two RF modules on a single main board for more flexible combination in real-world applications. The product features roaming capability: while in motion, it autonomously determines and switches between different base stations based on signal strength, supporting mobile speeds greater than 260 km/h. It is therefore well suited for roadside, mining, and tourism areas that require vehicle-based mobile monitoring.

The YNW-5800 series can be customized to high-power variants with transmission power rated up to 3W, without degrading throughput in high-power operation. Leveraging its inherent characteristics, the equipment supports Point-to-Multipoint, Point-to-Point, Roaming, and MESH Ad-Hoc topologies, and is widely applied to both fixed and mobile surveillance in forest fire prevention, urban wireless Internet coverage, pristine forests, rivers and lakes, mining areas, unmanned aerial vehicles (UAVs), robots, pipelines, large industrial zones, roadways, power plants, electric utilities, fire brigades, public security, vehicles, and maritime vessel law-enforcement operations.

- **Core Selling Points:** Dual-band multi-module design (2.4GHz/5GHz), centerless-gateway MESH intelligent Ad-Hoc networking, automatic roaming (speed >260 km/h), and customizable high-power output (3W)

- **Target Users:** Wireless system integrators, telecom operators, security/surveillance contractors, and private/industrial network operators
- **Typical Applications:** Outdoor campus coverage, wireless surveillance backhaul, plant backbone transmission, urban coverage, and mobile monitoring for mining/roadway/scenic areas

> **Design Highlights:** Dual-band, dual-module architecture with flexible multi-module combination; centerless Ad-Hoc networking with congestion-free ring topology; both wired Ethernet ports also support MESH; IP67-rated protection with corrosion-resistant metal housing for long-term stable outdoor operation.

2. Product Views

YNW-5800 Product Views

YNW-5800 Product Views

3. Key Features

Dual-band Multi-module Design

Each module supports 2.4GHz/5GHz dual-mode transmission; up to dual-module / two RF modules per board, automatically switching to an alternate frequency band under interference

Centerless MESH Ad-Hoc

No central gateway required — any unit can self-organize; offline devices trigger automatic handover so the network never drops; ring topologies run congestion-free

Automatic Roaming

Automatically switches between base stations based on signal strength while moving at speeds above 260 km/h, ideal for vehicle mobile monitoring

High Throughput

2×2 MIMO, single radio 300Mbps with 180Mbps bandwidth; dual radio 300Mbps×2 with 280Mbps bandwidth

Powerful Hardware Platform

Atheros AR7161 (680MHz) + 128MB RAM, IP67-rated waterproof/dustproof metal housing, operates from -30°C to 75°C

Flexible Multi-mode Operation

Supports Base Station / CPE / P2P (Bridge) / MESH modes, and customizable high-power output (up to 3W) without throughput loss

4. Technical Specifications

4.1 Major Components

Category	Parameter	Specification	Custom Option
Major Components	**Processor**	Atheros AR7161 (680MHz)	—
	Flash Memory	16MBytes	—
	RAM	128MBytes	—

4.2 RF & Wireless

Category	Parameter	Specification	Custom Option
RF & Wireless	**Operating Frequency**	4900 ~ 6100MHz; 2212 ~ 2542MHz	—
	Standards	IEEE802.11a/b/g/n CSMA/CA	—
	RF Type	HTOFDM	—
	Transmit Power	26dBm, 35dBm	Customizable (up to 3W)
	Antenna Type	2×N-type (1 radio module) / 4×N-type (2 radio modules)	—
	Receive Sensitivity	-95dBm@6Mbps; -79dBm@54Mbps, PER<10%; -94dBm@MCS0/8; -76dBm@MCS7/15, HT20; -90dBm@MCS0/8; -74dBm@MCS7/15, HT40	—
	Modulation	64QAM 3/4, 64QAM 2/3, 16QAM 3/4, 16QAM 1/2, QPSK 3/4, QPSK 1/2, BPSK 3/4, BPSK 1/2	—
	Channel Bandwidth	2.5/3/3.5/4/5/6/7/8/10/12/14/15/20/30/40/52MHz	—
	Antenna Connector	N-type: 2 connectors (1 module) / 4 connectors (2 modules)	—

4.3 Network & Management

Category	Parameter	Specification	Custom Option
Network & Management	**Network Interface**	Ethernet 10/100/1000 Mbps	—
	Encryption	WEP, TKIP, AES; Open System, Shared Key WPA/WPA-PSK, WPA2/WPA2-PSK; 802.1x (PEAP/TLS/TTLS), WAPI	—
	Management	Web GUI (English/Chinese), Telnet management	—
	Reset	Software reset, built-in hardware reset	—
	Network Functions	VLAN, DHCP, NAT, ARP, TCP, UDP, IGMP, HTTP, STP, NTP, Firewall, Virtual Bridge (up to 128 SSIDs), IPv6, Packet Analysis & Filtering, Advanced Traffic Control (QoS), etc.	—
	Roaming	Client automatic roaming/handover	—
	Operating Modes	Base Station, CPE, P2P (Bridge), MESH	—
	Network Utilities	Ping command, network detection / site survey	—
	Positioning	Online map, GPS antenna positioning, manual coordinate input	—

4.4 Electrical

Category	Parameter	Specification	Custom Option
Electrical	**Operating Voltage**	9~24VDC, or standard PoE powering	—
	Power Consumption	Single module <10W / Dual module <20W	—
	Watchdog	Hardware watchdog	—

4.5 Physical & Environmental

Category	Parameter	Specification	Custom Option
Physical & Environmental	**Operating Temperature**	-30°C ~ 75°C	—
	Humidity	0% ~ 95% Non-condensing	—
	Storage Temperature	-40 ~ 85°C	—
	Ingress Protection	Outdoor IP67 rated	—
	Dimensions / Weight	265 × 265 × 100 (mm) / 3.25Kg	—

5. Features & Functions

> **Feature Overview:** The YNW-5800 series features a dual-band, multi-module hardware architecture supporting AP/CPE/Bridge/MESH operating modes and automatic roaming, along with comprehensive wireless parameter tuning, data security encryption, diverse network management utilities, and efficient MESH networking.

5.1 Hardware Architecture

- **Dual-band Multi-module Interface Design:** Each module provides 2.4GHz/5GHz dual-mode transmission and switches to an alternate frequency band when subject to interference;
- **Wireless Standards:** Compliant with IEEE802.11a/g/n, operating at 2.212~2.542GHz and 4.900~6.100GHz;
- **Transmission Technology:** 2 × 2 MIMO;
- **Data Rates:** 1 radio card 300Mbps×1 with 180Mbps transmission bandwidth; 2 radio cards 300Mbps×2 with 280Mbps transmission bandwidth;
- **Higher-grade Hardware:** CPU Atheros AR7161 (680MHz), 16MB SPI flash, 128MB DDR SDRAM, capable of handling high-quality video transmission;
- **IP67-rated waterproof and dustproof;**
- **-30~75°C operating temperature;**
- **Hardware watchdog support;**
- **Independent VLAN and Ethernet switching at the data-link layer, or router interconnection;**
- **Corrosion-resistant metal housing.**

5.2 WiFi Standards & Advanced Functions

- **Dynamic multi-mode exit/interface allocation** for the wireless network to handle multi-link relay and aggregated traffic transmission;
- **Wireless client bandwidth control** to manage wireless transmission traffic;
- **AP/CPE/Bridge/MESH operating functions;**
- **Multiple bidirectional bandwidth management** tools to manage wireless transmission traffic;
- **Configurable channel / transmit power / rate / maximum distance** for transmission link stability;
- **Advanced wireless parameter tuning** to optimize RF signal quality and transmission stability;
- **Wireless node (client) information retrieval** to verify antenna alignment (built-in antenna alignment function);
- **Wireless client connection limit;**
- **Client user isolation;**
- **Redundant backbone backup link** via relay hops;
- **Roaming and handover capability;**
- **Client CPE connectivity** (interoperable with other vendors' products);
- **Automatic CPE discovery and connection;**

- **Built-in GPS** displaying connection status coordinates on the UI;
- **Bandwidth adjustment:** 2.5MHz, 3MHz, 3.5MHz, 4MHz, 5MHz, 6MHz, 7MHz, 8MHz, 10MHz, 12MHz, 14MHz, 15MHz, 20MHz, 30MHz, 40MHz, 52MHz;
- **Frequency adjustment** in steps as fine as 2.5MHz.

5.3 Data Security & System Management

- **SSID security mechanism** with on/off/broadcast control;
- **Fixed AP MAC Address binding** to prevent intrusion and restrict connectivity;
- **MAC Address Filtering** wireless security mechanism;
- **WPA/WPA2 PSK / AES (128-bit) encryption;**
- **Web-based management via HTTP WEB GUI;**
- **Telnet configuration support;**
- **SSH encrypted configuration;**
- **Command-line Interface (CLI) commands;**
- **Simple Network Management Protocol (SNMP) v2c/v3 with standard/private MIBs;**
- **System logging (Syslog);**
- **Management VLAN tagging;**
- **NTP client for network time synchronization;**
- **Firmware upgrade / rollback** (upgrade / downgrade);
- **Dual firmware images;**
- **Multiple-level management.**

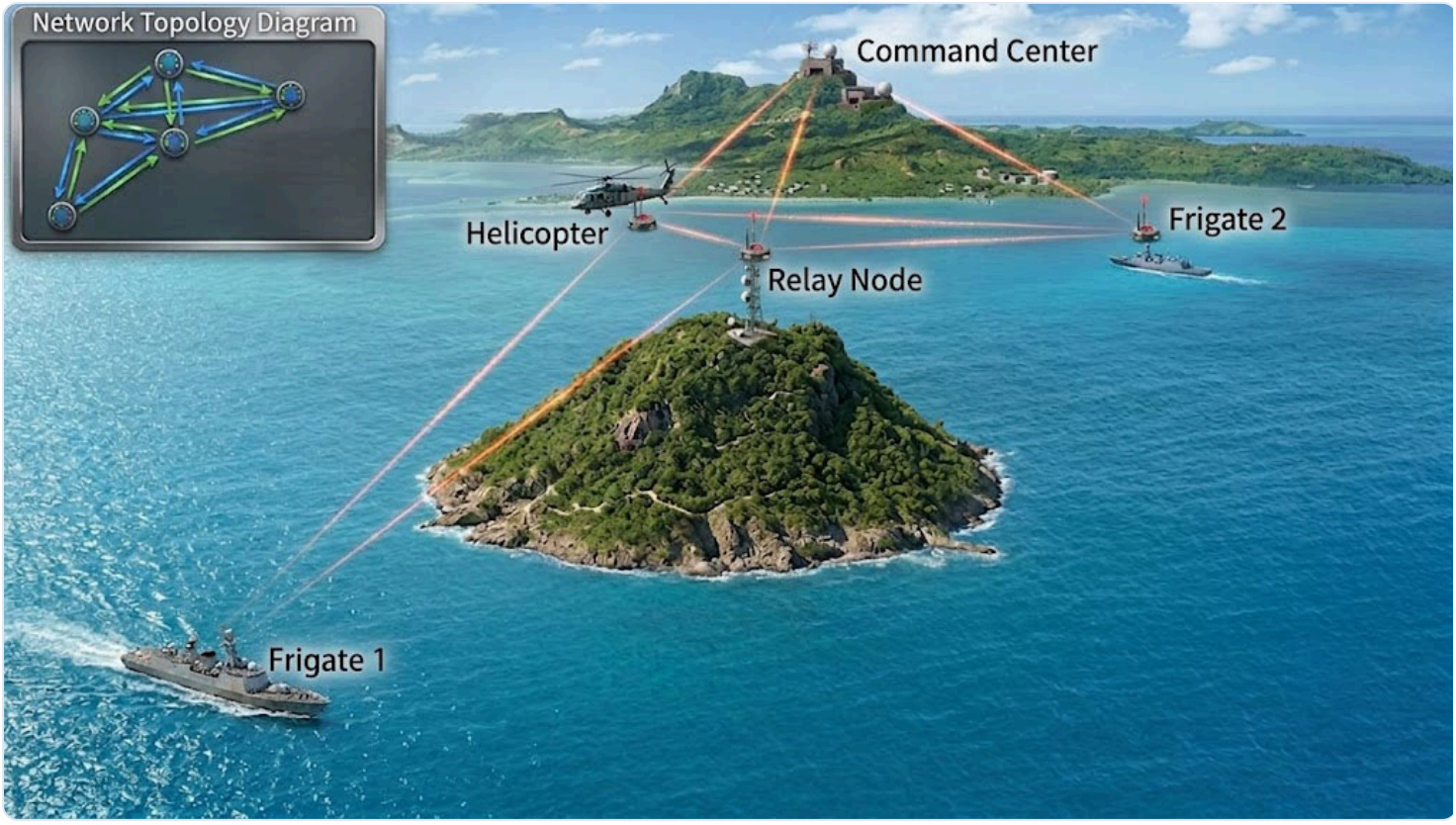
5.4 MESH Network Functions

- **OSI Layer 2 Mesh Network:** OSI Layer 2 data-link-layer MESH data transmission for fast data forwarding and self-healing links, reducing path-selection delay and multi-hop relay bandwidth attenuation;
- **Automatic optimal path discovery;**
- **Automatic link-recovery path finding on disconnection;**
- **Automatic network traffic balancing;**
- **Automatic system node information updates;**
- **Automatic system configuration updates via gateway or server;**
- **Rapid automatic path transmission;**
- **High-speed roaming transmission using signal- and data-rate-based logic.**

6. Applications

The YNW-5800 series is an enterprise- and carrier-grade outdoor MESH wireless intelligent networking device that provides wireless system integrators with PtP (Point-to-Point) / PtMP (Point-to-Multipoint) / Hotzone wireless coverage architectures. With its 2.4GHz and 5GHz dual-band, multi-module design, the product readily resolves bandwidth insufficiency for long-distance transmission. Using a centerless-gateway intelligent Ad-Hoc architecture, it suits centerless fixed/mobile surveillance, long-distance video backhaul, large-area wireless coverage, and data backbone transmission deployments.

1. Border & Coastal Defense MESH Ad-Hoc Wireless Communications



Application Scenario

Border patrol, coastal surveillance, border port control, coastline warning, border outpost interconnection, and maritime law-enforcement vessel formations — long-range, wide-coverage border and coastal defense communications. National borderlines and coastlines are extensive with complex, varied terrain including mountains, deserts (gobi), jungles, and islands where conventional public networks often fail to provide full coverage, making dedicated broadband communications essential for border and coastal defense command and dispatch.

Deployment Solution

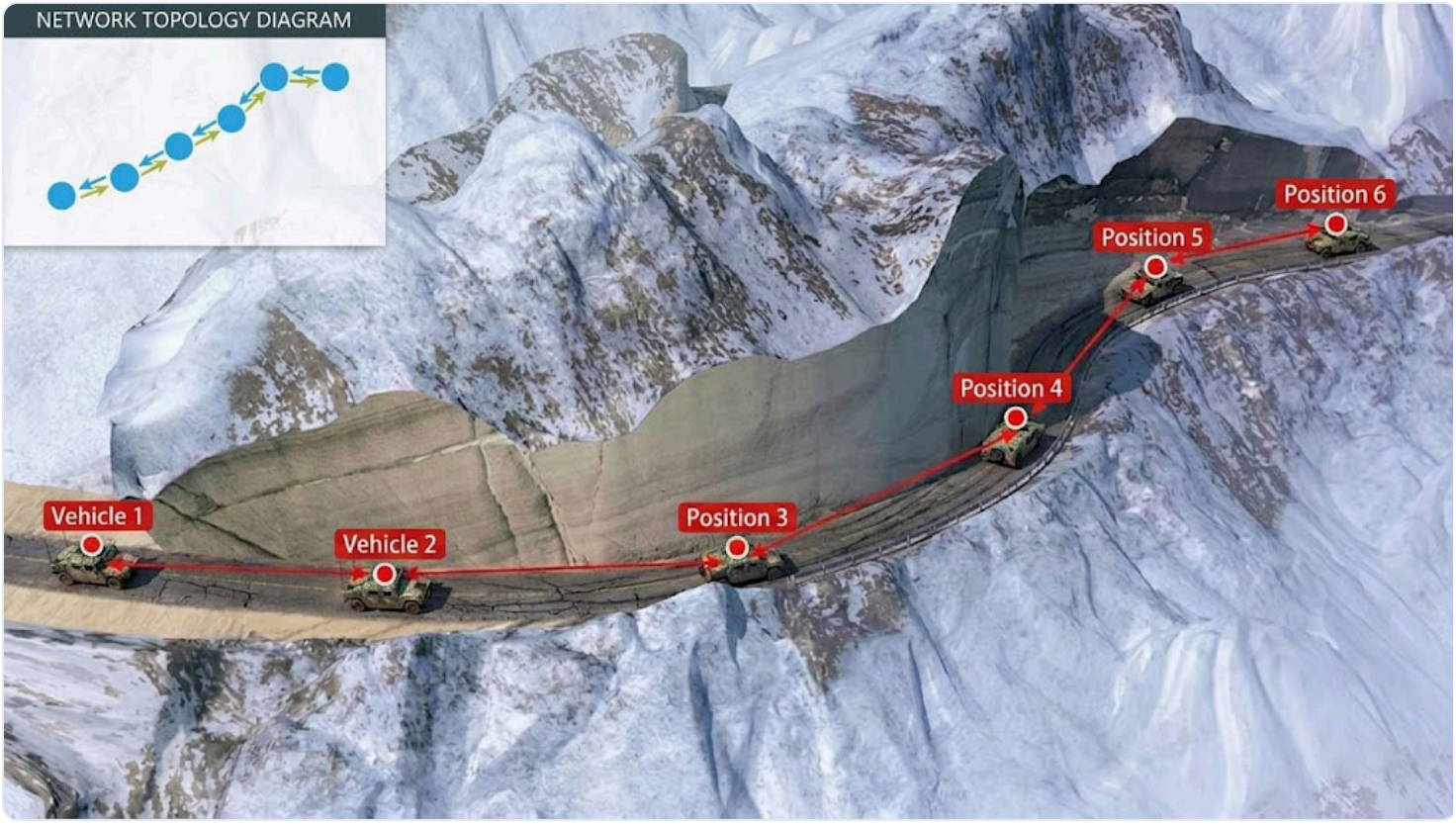
- **Dual-band multi-module networking:** The YNW-5800 2.4GHz/5GHz dual-band, multi-module design supports multi-hop cascade deployment along borderlines or coastlines to build a long-range, centerless dedicated broadband network; any node going offline triggers automatic switching so the network never drops.
- **Diverse node types:** Fixed installation at border outposts, vessel deployment on patrol boats, mobile command-vehicle installation, and follow-along personnel terminals form a free Ad-Hoc network achieving integrated "shore–sea–air" coverage.
- **Ring network design:** A flexible ring topology can be deployed without concern for ring congestion, improving network redundancy and reliability.

Application Value

Real-time HD video, voice intercom, and data backhaul between border outposts, patrol boats, and mobile command vehicles keep the command link active even in remote areas without public network coverage. The

command center can promptly grasp border dynamics and maritime situational awareness, effectively enhancing border/coastal situational awareness, rapid response, and coordinated operations, and providing reliable communications support for border and coastal control.

2. Convoy MESH Ad-Hoc Wireless Communications



Application Scenario

Convoy road marching, material transport, tourism-area vehicle monitoring, mining-area vehicle dispatch, roadway vehicle mobile monitoring, and logistics fleet coordination — mobile scenarios. As inter-vehicle distances constantly change and road conditions are complex, conventional communications cannot guarantee stable real-time links between convoy members.

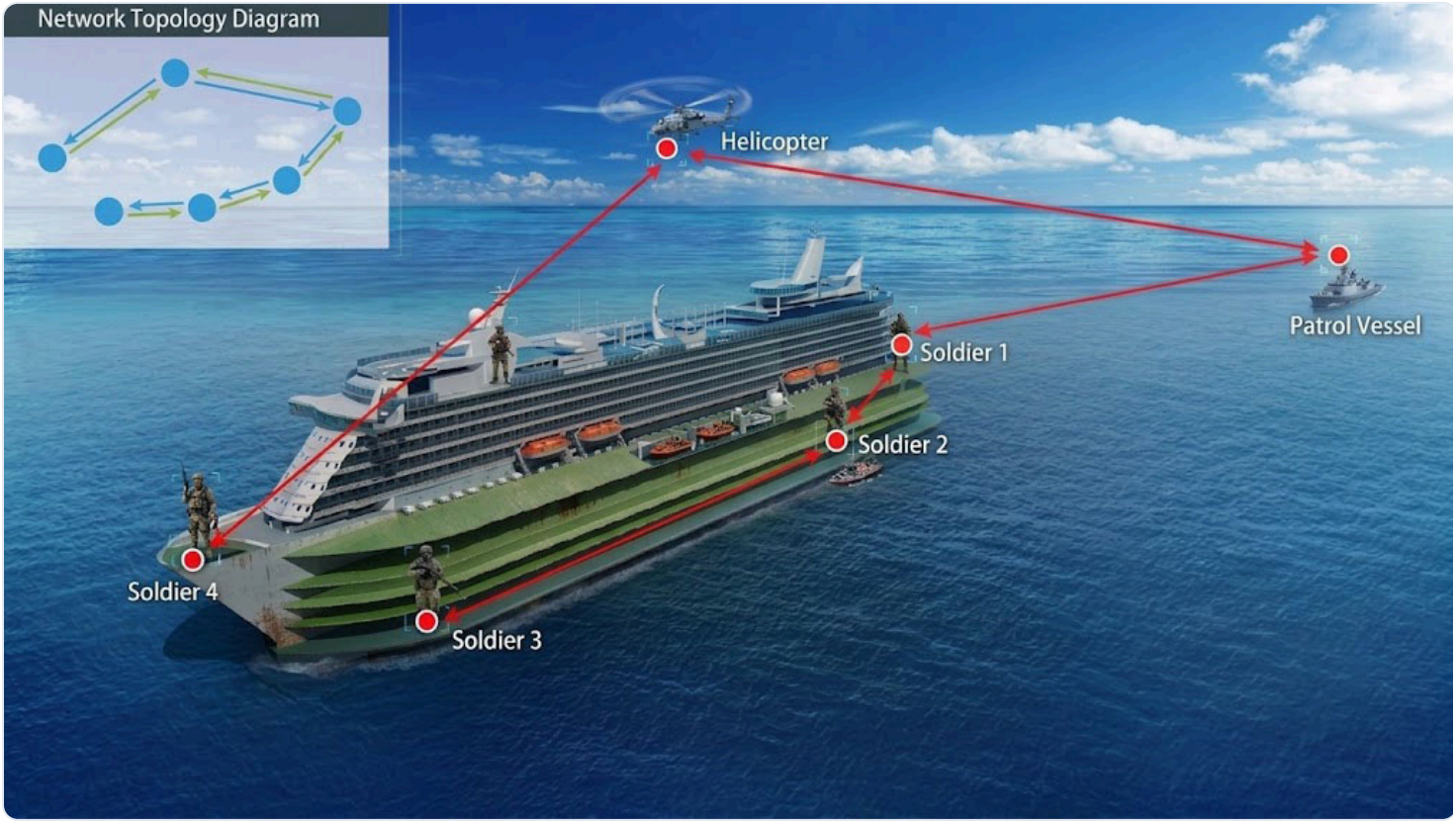
Deployment Solution

- **Vehicle-to-vehicle direct networking:** A YNW-5800 is deployed on each vehicle, and links are automatically established over MESH Ad-Hoc networking without depending on fixed base stations or public networks.
- **Automatic roaming handover:** Under high-speed vehicle movement (speed >260 km/h), handover is autonomously determined by signal strength between base stations without service interruption.
- **Concurrent multi-service:** Supports HD video backhaul, voice intercom, and vehicle position sharing; 2×2 MIMO high throughput satisfies broadband service requirements.
- **Relay extension:** Multi-hop MESH relay extends coverage for seamless regional coverage.

Application Value

While in motion, HD video, voice intercom, and location information are shared in real time between vehicles, and the command vehicle can grasp the full convoy situation for integrated formation command and coordinated dispatch. In mining, roadway, and tourism vehicle-mobile-monitoring scenarios, it provides a public-network-independent dedicated channel, significantly improving mobile command and surveillance coverage.

3. Vessel-boarding Reconnaissance MESH Ad-Hoc Wireless Communications



Application Scenario

Maritime boarding inspection, surveillance and evidence collection, cross-ship coordinated operations, fleet formation communications, maritime law-enforcement boarding, coast guard patrols, and naval tactical coordination. The maritime environment presents unique challenges including wave-induced motion, severe multipath interference, and constantly changing relative positions between vessels.

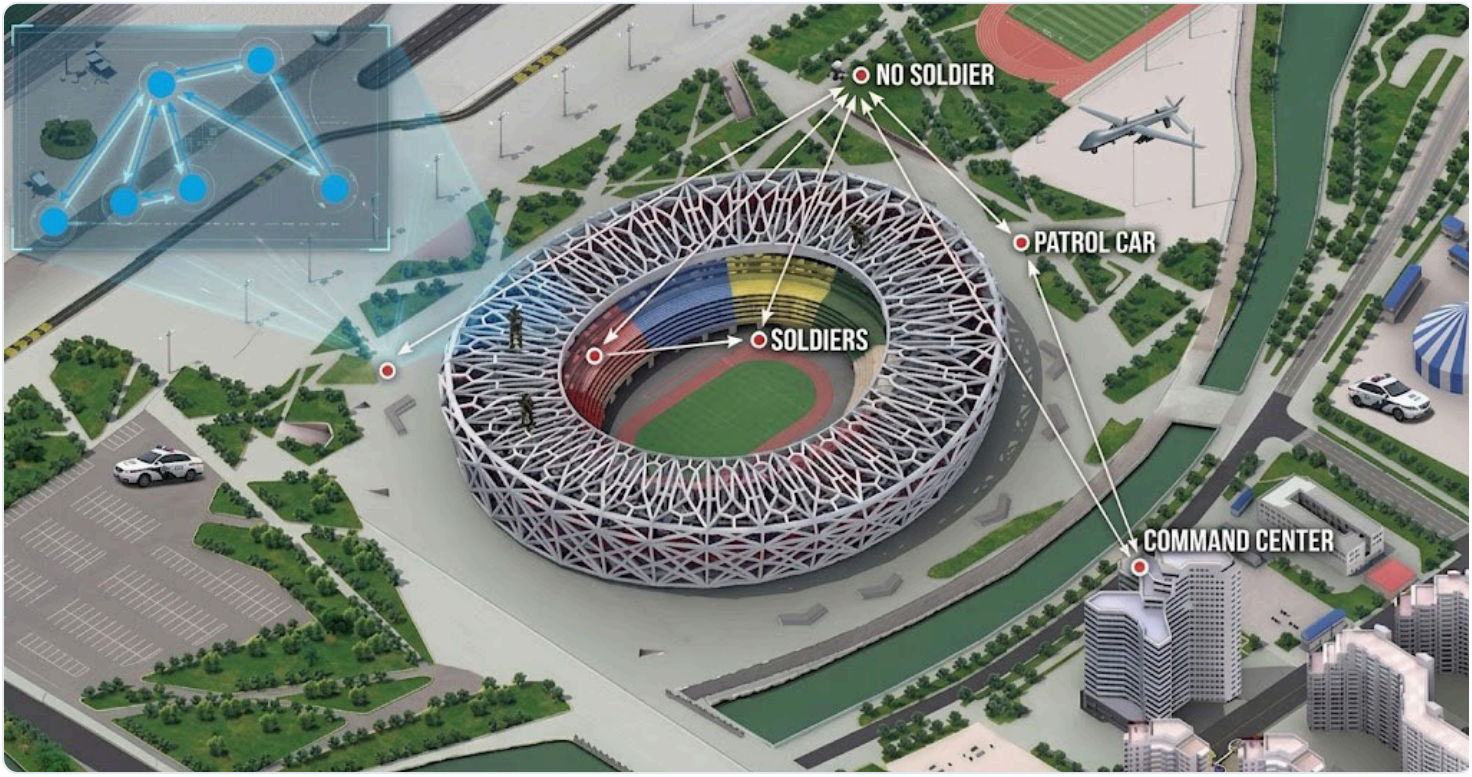
Deployment Solution

- **Vessel-to-vessel coordinated networking:** A YNW-5800 is deployed on each vessel; broadband MESH Ad-Hoc links form automatically between vessels to support formation coordination and integrated communications.
- **Dual-band anti-interference:** The 2.4GHz/5GHz dual-band design switches frequencies under interference, effectively countering maritime multipath reflections to maintain link stability.
- **Fast roaming convergence:** Automatic roaming handover reconfigures the network as vessel relative positions change, without communication interruption.

Application Value

During boarding inspections, surveillance/evidence collection, and cross-ship coordination, stable maritime broadband Ad-Hoc links between vessels enable real-time backhaul of HD video and voice, providing reliable communications support for maritime law enforcement, search and rescue, and tactical coordination, thereby significantly improving maritime enforcement safety and coordination efficiency.

4. Public Security Disposal & Armed Patrol MESH Ad-Hoc Wireless Communications



Application Scenario

Major event security (conferences, competitions, performances), temporary interception and arrest operations, armed patrols, counter-terrorism and emergency response, mass-incident disposal, and checkpoint enforcement. Such public-safety scenarios impose extremely high requirements on rapid deployment, temporary private networks, multi-channel video backhaul, and resilience against public-network congestion.

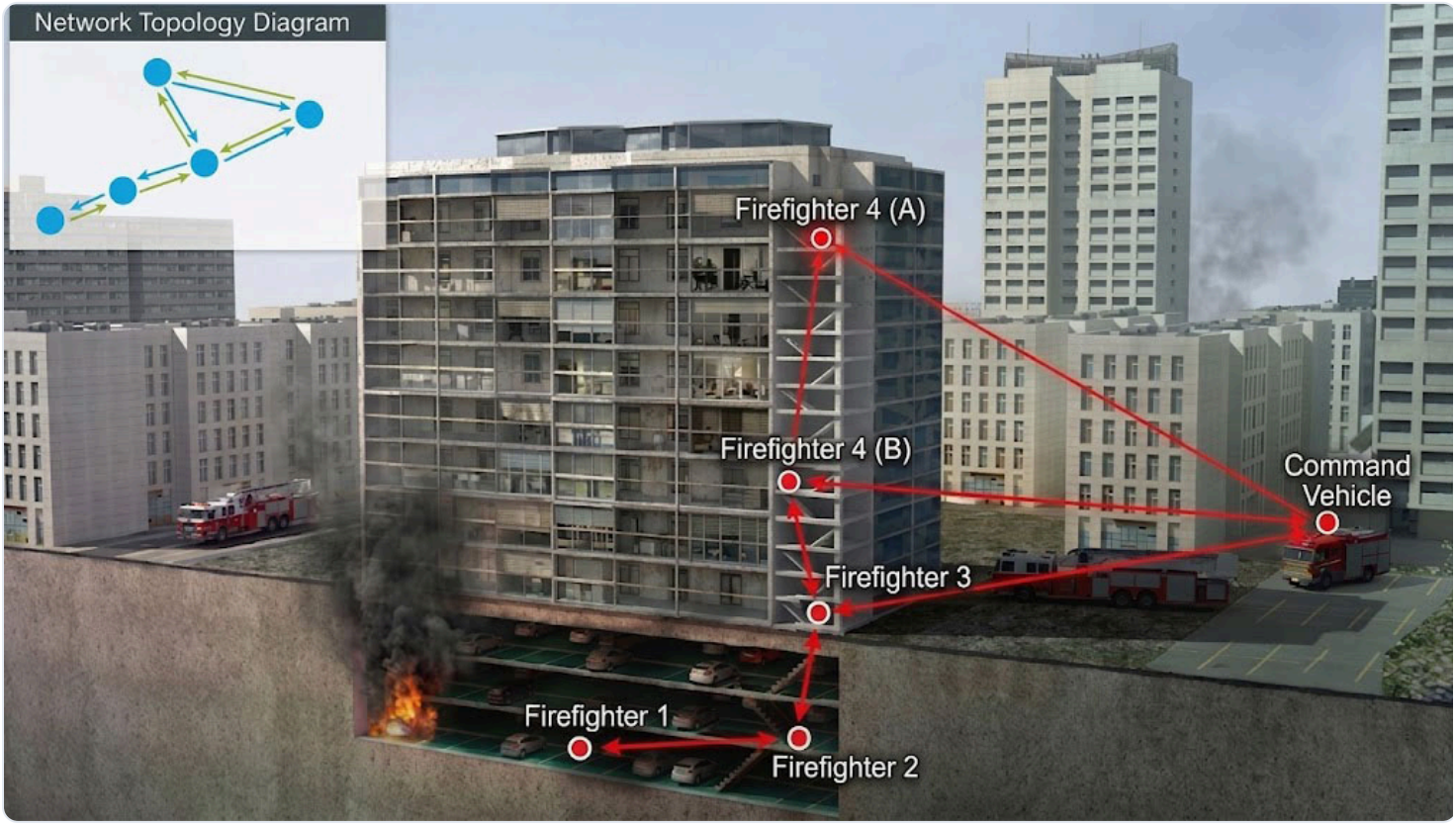
Deployment Solution

- **Rapid temporary private network:** The YNW-5800 rapidly builds a wireless IP MESH network dynamically on-site without configuration, establishing a dedicated broadband network completely independent of the public network.
- **Centerless architecture:** The centerless Ad-Hoc architecture keeps the network running even if any device goes offline, maintaining communications under traffic congestion or public-network outage emergencies.
- **Multi-terminal integrated access:** Body-worn terminals, vehicle terminals, and temporary surveillance cameras converge through the MESH network, backhauling multiple real-time video streams to the command center.
- **Secure encryption:** Supports WPA/WPA2-PSK/AES and 802.1x/WAPI multi-layer encryption for secure public-security private-network information transmission.

Application Value

Provides the public-security command with real-time on-site situational awareness during major event security, temporary disposal, and armed patrol operations, with stable backhaul of multi-channel HD video, voice intercom, and data. The centerless architecture ensures uninterrupted communications even under extreme conditions such as public-network outage or congestion, enhancing rapid response and coordinated operations.

5. Firefighting & Rescue MESH Ad-Hoc Wireless Communications



Application Scenario

Fire suppression (building, forest, and chemical fires), earthquake rescue, accident emergency response, and hazardous-material leakage incidents. On-site public networks are often interrupted or severely congested during disasters, necessitating dedicated communications for rescue command.

Deployment Solution

- **Rapid on-site deployment:** The YNW-5800 can be rapidly deployed on command vehicles, temporary base stations, and body-worn equipment at the disaster site without any infrastructure, quickly building a dedicated broadband Ad-Hoc network.
- **Body-worn-to-vehicle-to-command tiered networking:** Rescuers carry portable MESH devices into the scene and backhaul HD video to the on-site command vehicle and rear command center via relays.
- **Self-healing / damage resilience:** When a node is damaged or moves, the network automatically reconfigures, and remaining nodes re-establish routing without communication interruption, sustaining rescue continuity.

Application Value

Enables the rear command center to grasp the full on-site picture, scientifically dispatch rescue forces, and improve rescue efficiency and safety. Provides reliable communications support within the "golden 72-hour rescue window," buying critical time to save lives and maximizing rescuer safety and rescue outcomes.

6. Natural-disaster Emergency Command MESH Ad-Hoc Wireless Communications

Application Scenario

Emergency command communications for sudden natural disasters — earthquakes (especially magnitude 7+), floods, debris flows, landslides, and typhoons. Such disasters commonly destroy extensive communications infrastructure and fully disrupt public networks, leaving emergency command in an "information island" dilemma.

Deployment Solution

- **Rapid disaster-area deployment:** Rescue teams carry YNW-5800 into affected areas, leveraging dual-band multi-module and wireless Ad-Hoc characteristics to rapidly erect temporary communication nodes and achieve wide-area coverage through multi-hop MESH relay.
- **Air-ground integrated networking:** Combined with UAV airborne relay platforms, an "air-ground" three-dimensional Ad-Hoc network overcomes complex terrain such as mountains and ruins for whole-disaster-area coverage.
- **Self-healing / damage resilience:** Self-healing ensures automatic network reconfiguration as nodes move, equipment is damaged, or new nodes join, with no manual intervention.
- **Multi-service convergence:** Converges disaster-area video backhaul, disaster data reporting, rescue-team position sharing, and command-instruction issuance.

Application Value

Provides stable, reliable communications support for emergency command and dispatch during sudden natural disasters, backhauling on-site video, disaster data, and rescue-team positions to front-line and rear commands

in real time. The command center fully grasps the disaster situation, scientifically dispatches rescue forces, improves rescue efficiency, and minimizes casualties and property loss.

7. Forest Fire Prevention MESH Ad-Hoc Wireless Communications

Application Scenario

Forest fire monitoring, forest-area patrol communications, watchtower interconnection, fire frontline command, fire-scene situational backhaul, pristine forest surveillance, and forest-area public-order control. China's extensive forest resources are mostly in mountainous and remote areas with weak public coverage, so forest-fire communications have long faced coverage and networking challenges.

Deployment Solution

- **Multi-point forest-area deployment:** YNW-5800 units can be deployed at watchtowers, fire checkpoints, and land-management stations to build a broadband Ad-Hoc private network covering vast forest areas.
- **Multi-hop relay overcoming terrain:** Dual-band multi-module devices combined with multi-hop relays overcome forest-line-of-sight blocking and terrain undulation for wide-area coverage in hills, mountains, and canyons.
- **Watchtower–UAV–body-worn coordination:** Fixed watchtower monitoring, patrol UAV aerial inspection, and on-site firefighting personnel form a three-position coordinated network, backhauling video and alarms to the fire-prevention command center in real time.
- **Automatic fire alarm:** Interfaces with smoke detectors and infrared thermal-imaging fire-monitoring devices; automatic fire alarms are backhauled to the command center over the MESH network for early detection, early reporting, and early response.

Application Value

Builds a broadband Ad-Hoc private network across vast forest areas, backhauling video and alarm information from watchtowers, patrol UAVs, and fire frontlines to the command center in real time for early detection,

reporting, and response. During an active fire, it provides reliable communications support for frontline command, improving coordinated suppression efficiency and safety assurance.
