



Outdoor Mesh Access Point
(AP-4000MR and AP-4000MR-LR)



Indoor Mesh Access Point (AP-4000M)

Outdoor Broadband Wireless Access

This portfolio includes:

- **Tsunami™ MP.11** – Capabilities of fixed and mobile WiMAX for U.S. and global markets
- **Tsunami™ MP.16** – WiMAX for the 3.5 GHz frequency band
- **ORiNOCO® Wi-Fi Mesh** – Outdoor and indoor Wi-Fi mesh for service providers and municipalities

High Capacity Mesh Access Points Deliver Flexible, Scalable and Reliable Data, Voice and Video for Large Metropolitan and Enterprise Wi-Fi® Deployments

Powered by the ORiNOCO Mesh Creation Protocol, the dual-radio ORiNOCO Wi-Fi Mesh Access Points deliver data, voice and video over Wi-Fi to the edge of a network over a flexible, auto-forming, self-healing, near line of sight mesh backbone. The dual-radio architecture separates the mesh backbone traffic from the edge access traffic, increasing capacity compared to single-radio mesh architectures. The ORiNOCO Wi-Fi Mesh Series consists of an indoor form factor (AP-4000M) and a ruggedized, outdoor form factor (AP-4000MR and AP-4000MR-LR¹). Seamless integration between ORiNOCO indoor and outdoor mesh access points enable existing indoor Wi-Fi mesh networks to extend outdoors.

- The ORiNOCO Mesh Creation Protocol (OMCP) enables mesh backhaul and Wi-Fi coverage on one radio, while the second radio is used exclusively for Wi-Fi coverage
- Industry-leading throughput with 802.11g and 802.11a simultaneous operation
- Super Mode allows Super Mode-capable clients to get double the data rate as standard clients while simultaneously allowing standard Wi-Fi clients to communicate with the access points
- Robust RADIUS accounting and authorization interface enables detailed subscriber usage tracking
- WMM/802.11e draft Quality of Service support for data, voice and video

Proactive Security Measures to Protect Your Network

ORiNOCO access points support the latest security standards, including IEEE 802.11i and AES encryption, and add proactive security measures to prevent attacks.

- Intra-cell blocking and traffic redirection to prevent subscriber-to-subscriber attacks
- Broadcast bandwidth throttling prevents broadcast attacks
- IEEE 802.1x mutual authentication
- Dynamic per-user, per-session rotating keys
- Rogue access point detection and notification
- Secure management interfaces: SNMPv3, SSL and SSH

Self-Forming/Self-Healing Mesh is Easy to Deploy

Ease of deployment and integration with the wired network are critical factors in a successful, profitable wireless network rollout. ORiNOCO access points excel with key capabilities that simplify WLAN deployment.

- Self-forming and self-healing ORiNOCO Mesh Creation Protocol automatically routes traffic through the best path as mesh access points are added or removed from the network
- Tools to speed installation and optimization: automatic channel selection, adjustable transmit power, external antenna connectors²
- Remote management via SNMP, HTTP and Telnet

Reliable by Design

ORiNOCO access points offer:

- Robust features for metropolitan Wi-Fi and enterprise applications
- Automatic reconfiguration of security policy in the event of power loss
- Dual firmware image support – for rollback in the event of software or configuration change problems
- Power-over-Ethernet support
- AC Power option for light pole installations³

¹Available for FCC only.

²External antenna connectors not available on models 8670M-US2 and 8670M-A.

³Available for AP-4000MR-LR version only.

APPLICATIONS

- Fixed Edge Access**
 Provides near line of sight Wi-Fi coverage by automatically routing traffic through the mesh backbone
- Mobile Edge Access**
 Enables Wi-Fi coverage in automobiles, buses, and trains
- Enterprise**
 Lowers infrastructure costs by not requiring Ethernet cabling to every access point

PERFORMANCE AND SCALABILITY

ORiNOCO Mesh Creation Protocol (OMCP)	Self-forming/self-healing dual-radio wireless mesh backhaul for industry leading throughput and availability
Tri-mode 802.11b, 802.11g and 802.11a Support	Pre-configured, simultaneous 802.11b, 802.11g, 802.11a support
Field Upgradeable	Software upgradeable to support new standards
IEEE 802.11i and AES Encryption	Highest authentication and encryption methods including mutual authentication, message integrity check (MIC), per-packet keys initialization vector hashing and broadcast key rotation
Rogue AP and Client Detection	Detects and alerts unauthorized rogue Access Points and clients in both the 2.4 and 5 GHz bands
Secure Management Interfaces	SNMPv3, SSL and SSH protect against unauthorized AP changes via the management interface
Multiple VLAN Support with Different Security Settings	Up to 16 separate VLANs per radio each able to support different authentication and encryption algorithms simultaneously
Multiple BSSID Support	Up to 4 Basic Service Set identifiers (BSSIDs) per radio
Auto Configuration via DHCP	Ensures new APs automatically receive correct configuration and prevents security vulnerabilities with deliberate resets
Assured Software Upgrades	Guarantees new AP configuration file is valid before deleting current image – dual image support
Quality of Service (QoS)	Draft IEEE 802.11e support along with 802.1p and 802.1q improve performance of video and voice applications
Transmit Power Control	Supports selectable transmit power levels to adjust coverage cell size
Automatic Channel Selection	Simplifies installation by choosing best possible channel upon installation
RADIUS Support	Extensive RADIUS Authentication Accounting support
Super Mode	Delivers greater than 30 Mbps throughput for ORiNOCO and Atheros-based clients while maintaining simultaneous compatibility with non-Atheros clients
Advanced Filtering Capabilities	IEEE 802.1d bridging with static MAC address filtering, network protocol filtering, Proxy ARP, multicast/broadcast storm threshold filtering, TCP/UDP port filtering, intra-cell traffic filtering to prevent client-to-client snooping
Near Line of Sight Capable	Line of sight and near line of sight connectivity extends deployment flexibility in rural as well as high-density urban areas

ORINOCO Wi-Fi Mesh Series

Technical Specifications

	ORINOCO AP-4000M	ORINOCO AP-4000MR	ORINOCO AP-4000MR-LR ¹
PRODUCT MODELS	8670M-XX ORINOCO AP-4000M Tri-mode, Mesh Access Point	8670-MR-XX ORINOCO AP-4000MR Tri-mode, Outdoor Mesh Access Point	8670-MR-LR-US ORINOCO AP-4000MR-LR Tri-mode, High Power Outdoor Mesh Access Point
RADIO & TRANSMISSION			
MODULATION METHOD			
802.11B OR G	OFDM; DSSS	OFDM; DSSS	OFDM; DSSS
802.11A	OFDM	OFDM	OFDM
FREQUENCY BAND			
802.11B/G	2.412 to 2.462 GHz	2.412 to 2.462 GHz	2.412 to 2.462 GHz
802.11A	5.15 to 5.25 GHz, 5.25 to 5.35 GHz, 5.725 to 5.85 GHz	5.15 to 5.25 GHz, 5.25 to 5.35 GHz, 5.725 to 5.85 GHz	5.725 to 5.85 GHz
DATA RATE			
802.11B	1, 2, 5.5, 11 Mbps	1, 2, 5.5, 11 Mbps	1, 2, 5.5, 11 Mbps
802.11G	6, 9, 12, 18, 24, 36, 48, 54 Mbps	6, 9, 12, 18, 24, 36, 48, 54 Mbps	6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps
802.11A	6, 9, 12, 18, 24, 36, 48, 54 Mbps	6, 9, 12, 18, 24, 36, 48, 54 Mbps	6, 9, 12, 18, 24, 36, 48, 54 Mbps
MAX OUTPUT POWER	+20 dBm for 802.11b, +18 dBm for 802.11g and 802.11a	+20 dBm for 802.11b, +18 dBm for 802.11g and 802.11a	+24 dBm for 802.11b, +24 dBm for 802.11g and 802.11a
INTERFACES			
WIRED ETHERNET	10/100Base-T Ethernet (RJ-45)	10/100Base-T Ethernet (RJ-45)	10/100Base-T Ethernet (RJ-45)
WIRELESS	1 integrated 802.11b/g radio and 1 integrated 802.11a radio	1 integrated 802.11b/g radio and 1 integrated 802.11a radio	1 integrated 802.11b/g radio and 1 integrated 802.11a radio
ANTENNA CONNECTOR	Integrated diversity 2.4 and 5 GHz antennas with horizontal and vertical polarization, and external antenna connectors 802.11b/g and 802.11a	Two external Type-N Female connectors; one connector for a 2.4 GHz antenna and one connector for a 5 GHz antenna	Two external Type-N Female connectors; one connector for a 2.4 GHz antenna and one connector for a 5 GHz antenna
PHYSICAL			
DIMENSIONS			
PACKAGED	11.375 x 9.25 x 2.75 in (288.9 x 235 x 69.9 mm)	14.57 x 13.7 x 8.19 in (370.1 x 348 x 208 mm)	14.57 x 13.7 x 8.19 in (370.1 x 348 x 208 mm)
UNPACKAGED	7.8 X 4.75 X 1 in (198 x 121 x 25 mm)	10.5 x 10.5 x 3.25 in (267 x 267 x 83 mm)	10.5 x 10.5 x 3.25 in (267 x 267 x 83 mm)
WEIGHT			
PACKAGED	2.05 lbs (0.93 kg)	11.1 lbs (5.03 kg)	11.1 lbs (5.03 kg)
UNPACKAGED	0.65 lbs (0.29 kg)	5.5 lbs (2.49 kg)	5.5 lbs (2.49 kg)
ENVIRONMENTAL			
TEMPERATURE	0° to 55°C (Operating) -20° to 85°C (Storage)	-40° to 60°C (Operating) -55° to 80°C (Storage)	-35° to 60°C (Operating) -55° to 80°C (Storage)
HUMIDITY	Max 95% relative humidity (non-condensing)	Max 100% relative humidity (non-condensing)	Max 100% relative humidity (non-condensing)
WIND LOADING	N/A	125 mph	125 mph
WATER & DUST PROOF	N/A	IP65	IP65
ELECTRICAL			
POWER SUPPLY	AC: 110/240 VAC, 50/60 Hz (input); 5V 3A (output)	PoE: 110/240 VAC (input); 48 VDC ± 10% (output)	PoE: 110/240 VAC (input); 48 VDC ± 10% (output)
(OPT) POWER SUPPLY	IEEE 802.3af Active Ethernet Support (Purchased separately)	N/A	110/240 VAC light pole power tap (purchased separately)
POWER CONSUMPTION	Maximum 10 Watts	Maximum 20 Watts	Maximum 20 Watts
LEDS	Power, Ethernet LAN Activity, Wireless B/G Activity, Wireless 802.11a Activity	Power/Ethernet LAN Link, Wireless LinkMax	Power/Ethernet LAN Link, Wireless LinkMax
MANAGEMENT			
LOCAL	RS-232 Serial Port; DB9 Female	RS-232 Serial Port; mini-DIN	RS-232 Serial Port; RJ11
REMOTE	DHCP, Telnet, HTTP, TFTP, Boot P, SNMPv1/v2c/v3; ORINOCO MIB, Etherlike MIB, 802.11 MIB, Bridge MIB, MIB-II	DHCP, Telnet, HTTP, TFTP, Boot P, SNMPv1/v2c/v3; ORINOCO MIB, Etherlike MIB, 802.11 MIB, Bridge MIB, MIB-II	DHCP, Telnet, HTTP, TFTP, Boot P, SNMPv1/v2c/v3; ORINOCO MIB, Etherlike MIB, 802.11 MIB, Bridge MIB, MIB-II
SECURE	SNMPv3, SSH, HTTPS	SNMPv3, SSH, HTTPS	SNMPv3, SSH, HTTPS
MTBF AND WARRANTY	100,000 hours; 1-year on parts and labor	100,000 hours; 1-year on parts and labor	100,000 hours; 1-year on parts and labor
PACKAGE CONTENTS	<ul style="list-style-type: none"> (1) AP-4000M tri-mode access point (1) Power adapter and support for Active Ethernet and IEEE 802.3af (AE injector purchased separately) (1) Cable cover and Ceiling or Wall mounting Plate (1) Installation CD-Rom with Software and Documentation (1) Quick Start Flyer 	<ul style="list-style-type: none"> (1) AP-4000MR dual-radio mesh access point (1) Power injector and power cord (1) Mini-DIN to DB9 serial connector (1) Cable termination kit (1) Wall/Pole Mounting bracket and hardware (1) Installation CD-Rom with Software and Documentation 	<ul style="list-style-type: none"> (1) AP-4000MR dual-radio mesh access point (1) Power injector and power cord (1) Mini-DIN to RJ11 serial connector (1) Cable termination kit (1) Wall/Pole Mounting bracket and hardware (1) Installation CD-Rom with Software and Documentation
RELATED PRODUCTS	ORINOCO AP-4000MR, AP-4000MR-LR and AP-4900MR-LR to extend mesh networks outdoors, 2.4 GHz antennas, 5 GHz antennas, ProximVision™ Network Management System, Tsunami MP.11 for backhaul between groups of AP-4000MR-(LR) mesh radios, ServPack (US/CAN Only)	ORINOCO AP-4900MR-LR 2.4/4.9 GHz mesh access points for public safety networks, 2.4 GHz Direct Connect Antennas (1086-OA24-DC5 & 1086-OA24-DC8), 5 GHz Direct Connect Antennas (1086-OA54-DC8), ProximVision Network Management System, Tsunami MP.11 for backhaul between groups of AP-4000MR mesh radio	ORINOCO AP-4900MR-LR 2.4/4.9 GHz mesh access points for public safety networks, 2.4 GHz Direct Connect Antennas (1086-OA24-DC5 & 1086-OA24-DC8), 5 GHz Direct Connect Antennas (1086-OA54-DC8), AC Power Kit (1089-AC-KIT-TW), Wide Light Pole Mounting Kit (1090-LP-MNT-WD), ProximVision Network Management System, Tsunami MP.11 for backhaul between groups of AP-4000MR-LR mesh radios, ServPack (US/CAN Only)

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