

SkyExtender TriBand



Key Benefits

- **Integrated:** 5.8 GHz mesh backhaul, 4.9 GHz public safety, and 2.4 GHz public Wi-Fi in a single solution
- **Secure:** distinct frequencies for public safety and public Wi-Fi keep communications separate and secure
- **Broadband:** fixed broadband Internet access for commercial (homes and businesses) and municipal (schools, libraries, town centers) buildings
- **VoIP:** end-to-end quality of service for VoIP applications
- **Mobility:** connects to best-of-breed vehicle-mounted public safety solutions
- **Ease of Use:** auto-discovery, self-optimization and self-healing minimizes deployment expenses
- **Self-Optimized:** multiple links with optimized routing and link redundancy, load balancing capabilities

Mixed-Use Municipal Wireless Networks

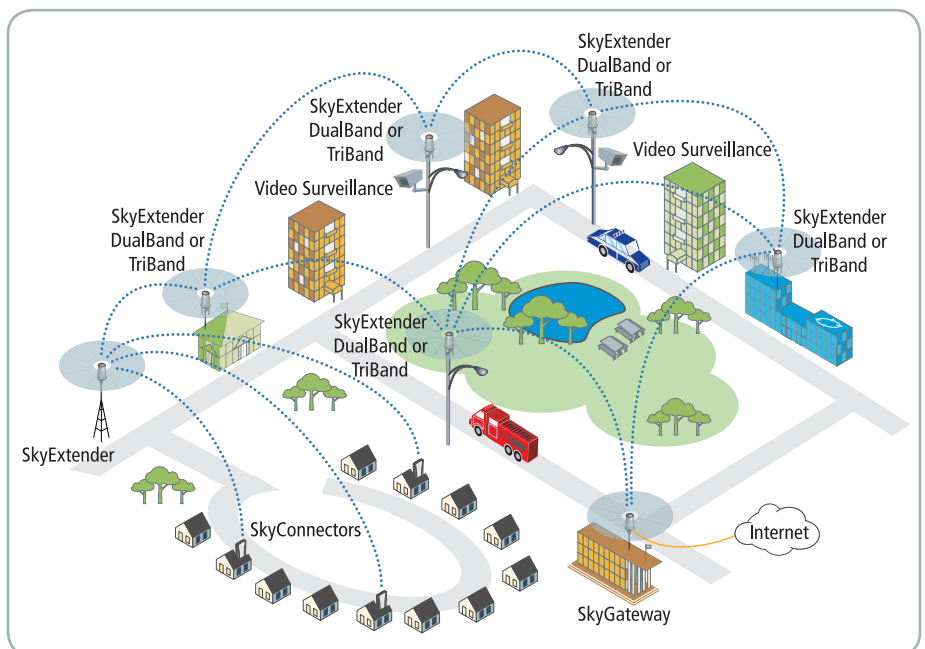
- **Public Wi-Fi Access:** municipal-wide Wi-Fi access bridges digital divide and drives economic development
- **Public Safety:** remote access for first responders (police, fire, EMS) and video surveillance support
- **Municipal Applications:** remote municipal worker connectivity, automated meter reading (water, gas, electric), wireless sensors
- **Fixed Broadband:** business, residential, and municipal buildings

SkyExtender TriBand – Integrated Public Wi-Fi and Public Safety

The SkyExtender TriBand is a highly versatile product that seamlessly integrates SkyPilot's industry-leading 5 GHz synchronous mesh backhaul with two high-power access points, one dedicated to licensed 4.9 GHz public safety applications and one dedicated to 2.4 GHz public Wi-Fi access. The SkyExtender TriBand is purpose-built to meet the combined requirements of the public/private partnership between municipalities and service providers by supporting a mixed-use environment of municipal applications and broadband Internet access services. The TriBand is a unique tri-radio solution system that integrates the full range of municipal wireless services, including:

- Integrated long-range, high-capacity, and encrypted backhaul connectivity over the unlicensed 5 GHz band through a patent-pending switched directional antenna array
- Integrated mesh networking capabilities, including automatic discovery, load balancing, self-healing failover, and optimal best-path routing with adaptive modulation
- Integrated and secure public safety access over the licensed 4.9 GHz band with a dedicated radio for interoperability with standard 802.11a clients
- Integrated public Wi-Fi access over the unlicensed 2.4 GHz band with a dedicated radio for interoperability with standard 802.11b/g clients
- Integrated support for fixed wireless CPE with symmetric and asymmetric broadband service tiers and rate-limiting capabilities
- Integrated support for end-to-end synchronous quality-of-service for VoIP applications

The TriBand provides all of these features while maintaining the ability to scale coverage, capacity, and performance through a mesh of SkyPilot equipment. Through the separation of access from backhaul and the use of multiple non-overlapping channels, the municipal network can provide scalable throughput, subscriber density, and network capacity.



SkyExtender TriBand System Specifications

Traffic Management

- VLAN support: IEEE 802.1q
- Traffic Prioritization: IEEE 802.1p, protocol type, IP port, IP ToS field, and IP address list
- Traffic Filtering: protocol type, IP port, and IP address list
- Traffic Shaping: upstream and downstream per-user rate control

Configuration, Management, & Monitoring

- NMS integration: SNMPv2c
- EMS: SkyProvision and SkyControl
- IP address: DHCP or static
- Firmware: Multiple versions stored in nonvolatile memory; updated via FTP
- Provisioning: Manual or automated
- Configuration file: XML over HTTP
- SNMP MIBs: MIB-II (RFC 1213); EtherLike (RFC 2665); Bridge (RFC 1493); 802.11; SkyPilot private MIB
- Remote logging
- Remote management: CLI via Telnet, SNMPv2c
- Local management: RS-232 serial console port

Radios, Antennas, and Security

	5 GHz mesh backhaul	802.11b/g AP	802.11a AP
Frequency band	4.940-4.990 GHz or 5.725-5.850 GHz	2.400-2.483 GHz	4.940-4.990
Antennas	8-antenna array (360° coverage), Each antenna: 45° horizontal x 6° vertical, 18 dBi	1 external 7.4 dBi omnidirectional antenna	1 external 9 dBi omnidirectional antenna
EIRP	28.2 W / 44.5 dBm EIRP peak	400 mW / 26 dBm radio → 2.2 W / 33.4 dBm EIRP	400 mW / 26 dBm radio → 3.2 W / 35 dBm EIRP
Media access	Time Division Duplex (TDD)	IEEE 802.11b/g CSMA/CA	IEEE 802.11a CSMA/CA
Wireless Connectivity	SkyGateways, SkyExtenders, and SkyConnectors	IEEE 802.11b/g Wi-Fi clients	IEEE 802.11a Wi-Fi clients
Modulation technique	OFDM	OFDM (802.11g) DSSS (802.11b)	OFDM (802.11a)
Modulation rates	6 to 54 Mbps	802.11b: 1 to 11 Mbps 802.11g: 6 to 54 Mbps	6 to 54 Mbps
Throughput	Up to 20 Mbps UDP / up to 12 Mbps TCP		
Latency	10-12 ms roundtrip per hop		
Channel width	5, 10, or 20 MHz	20 MHz	5, 10, or 20 MHz
Channel resolution	5 MHz frequency control	5 MHz frequency control	5 MHz frequency control
Receive sensitivity	-90 dBm at 6 Mbps modulation	-98 dBm at 1 Mbps modulation	-94 dBm at 6 Mbps modulation
Authentication	MD5-based certificates	RADIUS support for multiple servers 802.1x	
Encryption	128-bit AES encryption on all wireless links	WEP, Dynamic WEP, & WPA (EAP-TTLS, EAP-PEAP/MSCHAPv2 with TKIP)	

Product Specifications

Connectors	RJ-45: power & Ethernet (Power over Ethernet) RJ-45: RS-232 serial for local management
Mounting	Tower, utility pole, lampposts, building, or other infrastructure
LEDs	Wireless activity, wireless link
Dimensions	33.0" (83.8 cm) H x 12.2" (31.0 cm) diameter
Weight	15.0 pounds (6.75 kg)
Operating temperature	-40° to 131° F (-40° to 55° C)
Wind loading	Up to 100 mph (160 km/h)
Enclosure/humidity	NEMA-4X
Power	110VAC, 50-60 Hz input; 10 Watts
Certifications	FCC Part 15, FCC 47 CFR Part 15, Class B USA; compliance with UL safety standards
EMI and susceptibility	FCC Part 15.107 and 15.109



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 For more information about the SkyPilot System:
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