



SkyExtender Series

Mesh Expansion with Local Client Access Options

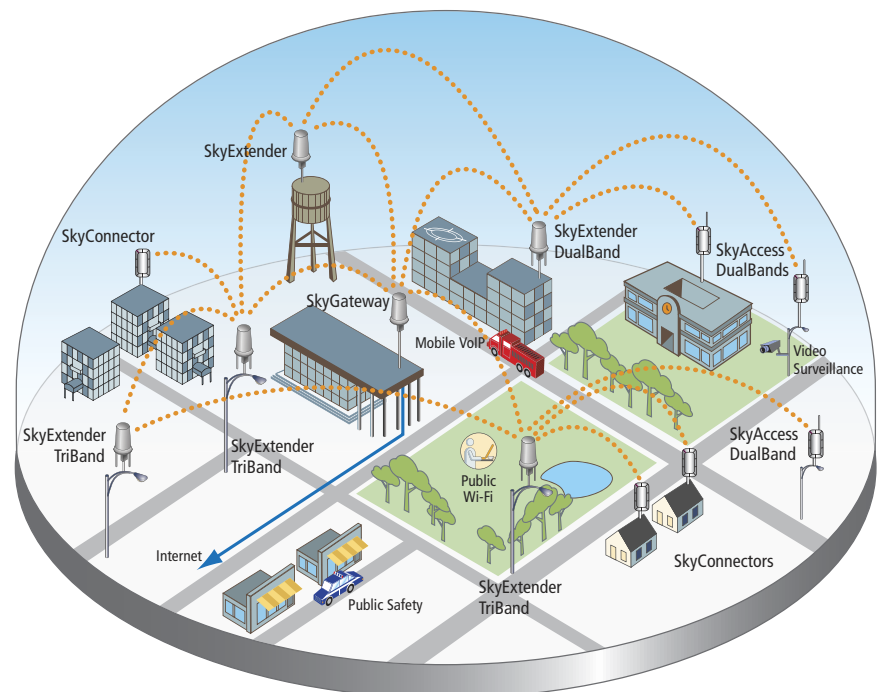
The SkyExtender™ series is a high capacity mesh device that is capable of fulfilling multiple roles in the wireless network. First, SkyExtender devices expand the network from a SkyGateway by creating a flexible and robust mesh topology that offers carrier-class reliability through dynamic best-path routing, self-healing failover, and adaptive modulation. Second, SkyExtender is available in DualBand and TriBand models to offer one or two integrated client access bands for serving various public and municipal applications. The versatile SkyExtender series allows service providers and municipalities to achieve unprecedented return on investment by deploying one wireless infrastructure that serves multiple private and public sector functions.

The SkyExtender series includes an advanced antenna array called SectorSwitch that provides 360° coverage using eight integrated antenna sectors. Each SkyExtender communicates using OFDM over a point-to-point link, allowing SkyPilot to utilize substantially higher output levels as defined by the FCC than conventional omnidirectional antennas. As a result, the SkyExtender mesh is capable of over 28 W EIRP, delivering high modulation rates and the ability to support longer ranges between mesh nodes up to 10 miles/16 km. Intelligent SyncMesh™ technology manages traffic across the mesh backhaul to mitigate interference and support the prioritizing of voice and data for Quality of Service.

SkyExtender DualBand and TriBand models are available with integrated access points that allow for simultaneous local client access without interrupting backhaul communications. Access points are available in 2.4 GHz for public Wi-Fi and licensed 4.9 GHz for municipal public safety. Each access point includes a high power radio with high gain omnidirectional antenna. With SkyExtender DualBand and TriBand nodes, service providers and municipalities can deploy a ubiquitous coverage area for public Wi-Fi access, first responders, mobile agency staff communications, and more, while seamlessly managing traffic across the SkyPilot wireless mesh backhaul.

Benefits

- **Robust mesh backhaul** can serve multiple applications over one wireless infrastructure
- **SyncMesh intelligence** manages traffic and RF performance to optimize available bandwidth
- **Lower OpEx** through auto-discovery and self-configuration, dynamic rerouting, and self-healing advantages of mesh
- **Dual and TriBand options** to support client services
 - 2.4 GHz for standards-based Wi-Fi HotZones
 - 4.9 GHz for licensed public safety agencies
- **End-to-end QoS** to support converged voice, data and video
- **Hybrid network ready** for citywide municipal and service provider deployments
 - Fixed broadband Internet services
 - Digital inclusion and public Wi-Fi access
 - Public safety and first responder communications
 - Mobile connectivity for remote agency staff
 - AMR and other e-government initiatives



SkyExtender series expands the wireless mesh to create a resilient, multi-hop mesh topology serving multiple broadband wireless applications

SkyExtender Series



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

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

| Models | SkyExtender | SkyExtender DualBand | SkyExtender TriBand |
|---------------|----------------------------|--|---|
| Mesh Backhaul | 4.9-5.8 GHz | 4.9-5.8 GHz (see below) | 4.9-5.8 GHz (see below) |
| Local Access | 10/100 Mbps Ethernet (PoE) | 10/100 Mbps Ethernet (PoE) | 10/100 Mbps Ethernet (PoE) |
| Wi-Fi Access | None | 802.11b/g (2.4 GHz) or 802.11a (4.9 GHz) | 802.11b/g (2.4 GHz) and 802.11a (4.9 GHz) |

Wi-Fi Access Specifications

| Access Point | 2.4 GHz | 4.9 GHz |
|---------------------|--|-----------------------------|
| Frequency Band | 2.400-2.483 GHz | 4.940-4.990 GHz |
| Radio (peak Tx) | 400 mW / 26 dBm | 400 mW / 26 dBm |
| Antennas | 7.4 dBi omni | 9.5 dBi omni |
| EIRP | 2.2 W / 33.4 dBm (maximum) 100 mW / 20 dBm (minimum) | 3.5 W / 35.5 dBm |
| Media Access | IEEE 802.11b/g CSMA/CA | IEEE 802.11a CSMA/CA |
| Modulation | OFDM (802.11g), DSSS (802.11b) | OFDM (802.11a) |
| Channel Width | 20 MHz | 5, 10, or 20 MHz |
| Receive Sensitivity | -98 dBm at 1 Mbps | -94 dBm at 6 Mbps (4.9 GHz) |
| Authentication | RADIUS support, 802.1x | |
| Encryption | AES, WPA (EAP-TTLS, EAP-PEAP/MSCHAPv2 with TKIP), MIC, and dynamic WEP | |

Mesh Backhaul Specifications

| | |
|---------------------|--|
| Frequency Band | 4.940-5.350 (not available with 4.9 GHz AP), 5.470-5.725, or 5.725-5.850 GHz |
| Radio (peak Tx) | 450 mW / 26.5 dBm |
| Antennas | Eight – antenna array – 18 dBi integrated sectors (45° horizontal, 6° vertical each sector) |
| EIRP | 44.5 dBm / 28.2 W peak (maximum) (also available in configurations for 36 dBm / 4 W, 33 dBm / 2 W, and 30 dBm / 1 W for international regulatory compliance) |
| Media Access | Time Division Duplex (TDD) |
| Modulation | OFDM with adaptive modulation |
| Throughput | Up to 20 Mbps UDP / Up to 12 Mbps TCP |
| Receive Sensitivity | -90 dBm at 6 Mbps |
| Channel Width | 20 MHz |
| Channel Resolution | 5 MHz frequency control |
| Range | Up to 10 miles / 16 Kilometers |
| Latency | 10-12 ms roundtrip per hop |
| Connectivity | SkyGateway Series and SkyExtender Series, SkyAccess and SkyConnector devices |
| Authentication | RSA-Based Certificates |
| Encryption | 128-bit AES |

Physical Specifications

| | |
|-----------------------|---|
| Connections | One RJ-45 – power and Ethernet (PoE) One RJ-45 – RS-232 serial for local CLI management |
| Mounting | Mast, tower, utility pole, light pole, building or other infrastructure (optional mounting kits available for some installations) |
| Indicators (LED) | Wireless activity, wireless link (located on device bottom for easier ground level viewing) |
| Dimensions | Height: 25 inches / 63.5 cm radome 33 inches / 83.8 cm with antennas |
| Weight | 15.0 pounds / 6.75 Kilograms |
| Operating Temperature | -40° to 131° F / -40° to 55° C |
| Wind Loading | Up to 150 mph / 242 kph |
| Enclosure | NEMA-4X |
| Power | 110 VAC, 50-60Hz input; 8.5-16 Watts (varies by model and other factors) |
| Certifications | FCC Part 15, FCC 47 CFR Part 15, Class B USA; compliant with UL safety standards; ETSI; ACA: RoHS |
| EMI | FCC Part 15.107 and 15.109 |



Leading the Mesh Revolution

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