

# Application Note

## Video Surveillance



### Benefits of the SkyPilot Synchronous Mesh Network Solution:

- **Sophisticated traffic control delivers exceptional quality of service for video and voice over IP (VoIP) applications**
- **Directional antennas and mesh-wide traffic coordination provide industry-leading performance and scalability**
- **The extended range and non-line-of-sight capabilities combine to lower costs and simplify the deployment**
- **Utilization of multiple RF bands (2.4, 4.9 and 5 GHz) enables support for multiple, concurrent applications**
- **Built-in security provisions protect the privacy and integrity of all traffic traversing the mesh network**

Video surveillance originated in the 1960's when closed-circuit television (CCTV) technology was first used to monitor and record events in a variety of venues. Centralized, around-the-clock monitoring has improved responsiveness while reducing overall surveillance costs for both public law enforcement and private security efforts. Recorded video has been just as valuable for its forensic purposes, as well as for prosecuting crimes.

Newer cameras now employ digital technology, which enables video surveillance to cover many more venues far more cost-effectively. By utilizing standard Ethernet interfaces and the ubiquitous Internet protocol (IP), video surveillance applications are able to leverage existing local and wide area networks to cover sprawling campuses and even entire cities, allowing virtually any site to be monitored. But there is still one more limitation: the high monthly cost of broadband WAN connectivity using leased T1/E1 or digital subscriber line (DSL) services. But what if these expensive wire-line services were no longer needed? What if video surveillance could be completely untethered?

### Video Surveillance with "No Strings Attached"

The versatility and scalability of wireless mesh networks makes them ideal for video surveillance applications. A wireless mesh is a self-forming, self-healing network that requires no separate wiring or costly backhaul services. The broadband mesh has the throughput and scalability required to handle numerous cameras, along with the reach needed to cover large geographies. And because the mesh topology automatically creates multiple paths among the many nodes, the network provides the requisite mission-critical reliability.

The wireless mesh network affords many additional advantages. Without wires, the network is considerably faster to deploy, and much less expensive to install, operate and maintain. There are virtually no restrictions on camera placement, and because the cameras are untethered, each can be moved easily. In fact, the entire network can be relocated to another site, allowing for "temporary" deployments that are perfect for construction sites, disaster recovery, special events, etc. Two-way communications allows pan/tilt/zoom (PTZ) and other camera features to be controlled centrally. The mesh network can even accommodate related needs, such as "simulcast" to multiple monitoring centers, and interoperable multi-agency communications from the monitoring centers or the field.



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### Third-generation Mesh Networking from SkyPilot

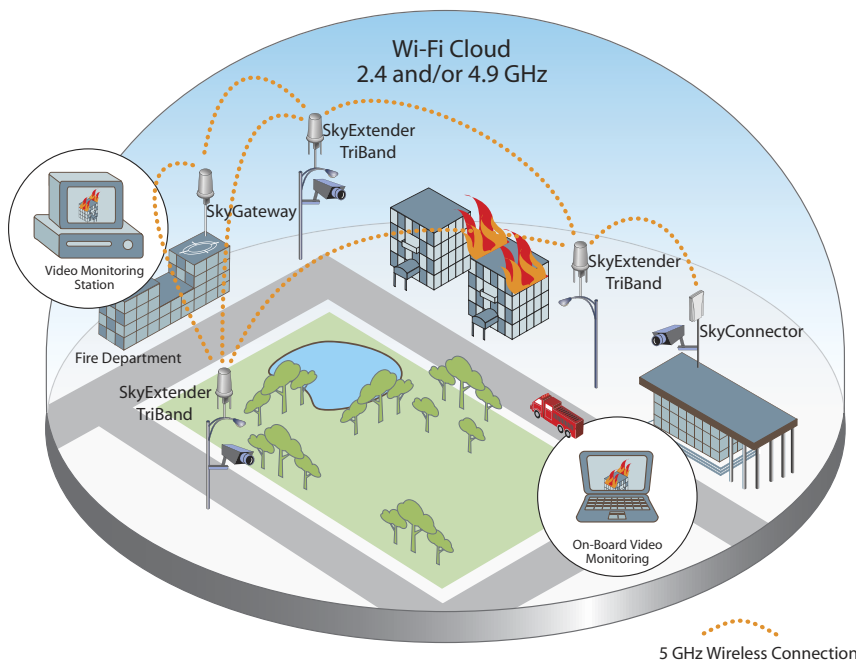
SkyPilot's third-generation, multi-radio (2.4, 4.9 and 5 GHz) Synchronous Mesh Network system maximizes the many benefits of using a wireless mesh network for video surveillance. The advanced SyncMesh™ architecture, with its use of a directional antenna arrays and mesh-wide traffic synchronization, gives the SkyPilot solution its industry-leading performance

In a typical deployment, the SkyPilot wireless mesh network backhauls video feeds from the many digital cameras to a centralized location where scenes can be monitored in real-time and recorded on specialized video servers. Without the need for backhaul wiring, cameras can be deployed literally anywhere. At any location requiring a camera, a mesh node is installed to attach the camera using a short Ethernet cable. Alternatively, cameras supporting Wi-Fi may connect

safety personnel, public Wi-Fi HotZones, broadband Internet access, and other remote monitoring or metering applications. Built-in security features, including access controls, authentication and traffic encryption, protect both the privacy and integrity of all video, voice and data traffic traversing the SkyPilot mesh network. For an additional layer of security, if desired, the SkyPilot solution permits the creation of Virtual LANs (VLANs) devoted exclusively to each separate application.

Perhaps the most significant advantage of the SkyPilot solution, though, is its unique ability to manage traffic with a deterministic quality of service (QoS). Features like traffic filtering, shaping and prioritization combine to ensure that each application is assigned an appropriate quality of service. Real-time video feeds, for example, demand a consistently high level of throughput. By contrast, voice traffic consumes much less bandwidth, but requires very low latency (delay) and jitter (variations in latency). With its comprehensive and centralized traffic management capabilities, the SkyPilot solution adapts easily to changing needs and priorities.

**To learn more about third-generation wireless mesh networking with the SkyPilot Synchronous Mesh Network solution, please visit SkyPilot on the Web at [www.skypilot.com](http://www.skypilot.com).**



and scalability, enabling cameras to be deployed cost-effectively throughout large geographies. Unlike point-to-point and point-to-multipoint topologies, the superior non-line-of-sight (NLOS) coverage allows the SkyPilot mesh to operate dependably and affordably in even the most challenging urban or rural environments. Where required, the extended range of the SkyPilot solution (up to 10 miles or 16 kilometers) allows cameras to be placed in areas well beyond the reach of most other wireless systems.

without any wires via a nearby access point on the mesh network. Special converters are even available to interface legacy analog CCTV cameras to the digital mesh network.

While it is common practice to devote a mesh network exclusively to video surveillance, the SkyPilot solution readily and securely accommodates additional applications. Such multi-service municipal wireless networks are often used to provide interoperable field communications for first responders and other public



*Leading the Mesh Revolution*

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