

Video Surveillance

Using Wireless Mesh Networks to Enhance Safety and Lower Surveillance Costs



Video surveillance is without question a powerful tool for public safety and security and with the increasing need for more security in airports, schools, and other critical environments, the demand for video installations is growing rapidly. An obvious benefit of video surveillance is 24/7 monitoring of both densely populated areas and remote, isolated locations. Whether used for live monitoring, recording, or both, video has proven to be invaluable for identifying individuals, spotting criminal activity, and recording accidents and other events.

Being able to connect digital video cameras to computer networks and the Internet has increased the flexibility and accessibility for both collection and distribution of video data. Although this enables cameras to be installed in more locations, the availability of network ports and cabling is still a limiting factor when deploying video cameras in many locations.

A Firetide wireless mesh network can eliminate most, if not all, of the issues associated with locations that are too difficult or expensive to wire. By providing a wireless network backbone, Firetide mesh networks enable

cameras to be installed without pulling cable through walls, trenching for fiber between buildings, or drilling holes for cables in older and historic buildings that were not designed for computer networks.

"Results have been impressive, especially in the quality of video the Firetide network supports. We were also able to increase coverage and save on manpower."

Detective Chris Jensen
 Drug Enforcement Bureau, Phoenix PD



By being able to deploy cameras quickly and cheaply in indoor and outdoor settings, security professionals can extend safety services with minimal additional staff or installation costs. Video surveillance for temporary venues such as concerts, festivals, and sporting events can be set up and removed quickly to service many events. This provides maximum utilization of the equipment with minimal installation effort and expense at each location.

CCTV, Digital Video, and Wireless Networks

In the past, security and surveillance cameras were connected to centralized monitoring and recording facilities with hard-wired coaxial cabling. Although analog closed circuit television (CCTV) cameras have provided affordable and reliable surveillance for many years, the combination of digital video and computer networks presented a number of major breakthroughs in surveillance technology.

Digital cameras enable much more flexible and efficient transmission and storage of video images. And unlike analog images that lose quality when copied or transmitted over long distances, digital video quality remains constant, making it even more effective for surveillance purposes. Newer digital cameras with Ethernet connections and support for Internet Protocol (IP) provide even more flexibility because they connect to standard computer networks. These cameras have their own IP addresses allowing them to be connected to and accessed from the Internet. Some even have integrated web sites making them accessible from any authorized browser. Optional remote control features such as pan, tilt, and zoom (PTZ) add to the usefulness of these cameras which in turn enhances security at surveillance sites.

Despite their significant advantages, IP cameras were still limited by how far their network cabling will reach. The ultimate in flexibility is to connect IP cameras to a wireless network so video surveillance can be installed virtually anywhere without cabling. Some cameras have a built-in Wi-Fi interface for connecting wirelessly to a nearby access point. However, because Wi-Fi networks do not provide the bandwidth and prioritization required for high speed video, wireless cameras are typically lower quality devices that are unsuitable for enterprise grade and public safety surveillance.

Reliable Connectivity for Video Streams

The best solution is a Firetide multi-service wireless mesh network. The Firetide mesh provides standard Ethernet ports on every wireless node, so virtually any enterprise grade IP camera can connect to the wireless mesh network. This capability means many more camera choices are available, and it also allows the seamless extension of networks that may already be in place. The Firetide mesh provides substantial bandwidth capable of supporting many simultaneous video streams. Traffic prioritization ensures smooth,



Firetide HotPort indoor mesh node



Firetide HotPort outdoor mesh node

jitter-free images at high frame rates, and because the Firetide mesh is not an open network, it doesn't have any of the security concerns associated with Wi-Fi networks.

"Wireless connectivity provides tremendous installation freedom for anyone needing to deploy network cameras in remote or difficult locations or for temporary installations."

Fredrik Nilsson, General Manager
Axis Communications

HotPort mesh nodes automatically locate each other to create an extensive wireless mesh backbone for transporting multimedia traffic. And unlike fixed wireless technology, if a link is blocked or if a node is removed, the Firetide mesh network reroutes traffic to assure maximum availability and reliability.

In addition to IP cameras, the Ethernet ports of a HotPort mesh node enable many other network devices such as sensors, printers, and computers to be connected to the wireless mesh for operation virtually anywhere, indoors and outdoors, without the need for backbone wiring. The entire mesh network can be managed remotely using Firetide's HotView® mesh management software so a single staff member can easily monitor and manage every node from one location.

HotPort mesh nodes provide up to 70 Mbps throughput and operate at 2.4 GHz, 4.9 GHz (U.S. public safety licensed band), or 5 GHz. Depending on the model, HotPort nodes are equipped with either single or dual radios, operating at 400 mW.



Firetide Hotport mesh nodes provide Ethernet ports so IP cameras and wired Ethernet devices can operate on a wireless mesh network. Outdoor mesh nodes utilize weatherproof connectors.

Enhanced Safety For Less

The presence of more surveillance cameras, especially in remote areas, can be a powerful deterrent to theft and harmful activities. With a Firetide mesh network, conventional IP video cameras can be installed anywhere, indoors and outdoors, to provide 24x7 surveillance of an entire site. The video feeds from all cameras can then be monitored in real time and recorded for scrutiny later. Support for power over Ethernet (PoE) on Firetide outdoor mesh nodes eliminates the need to provide a power source for outdoor camera.

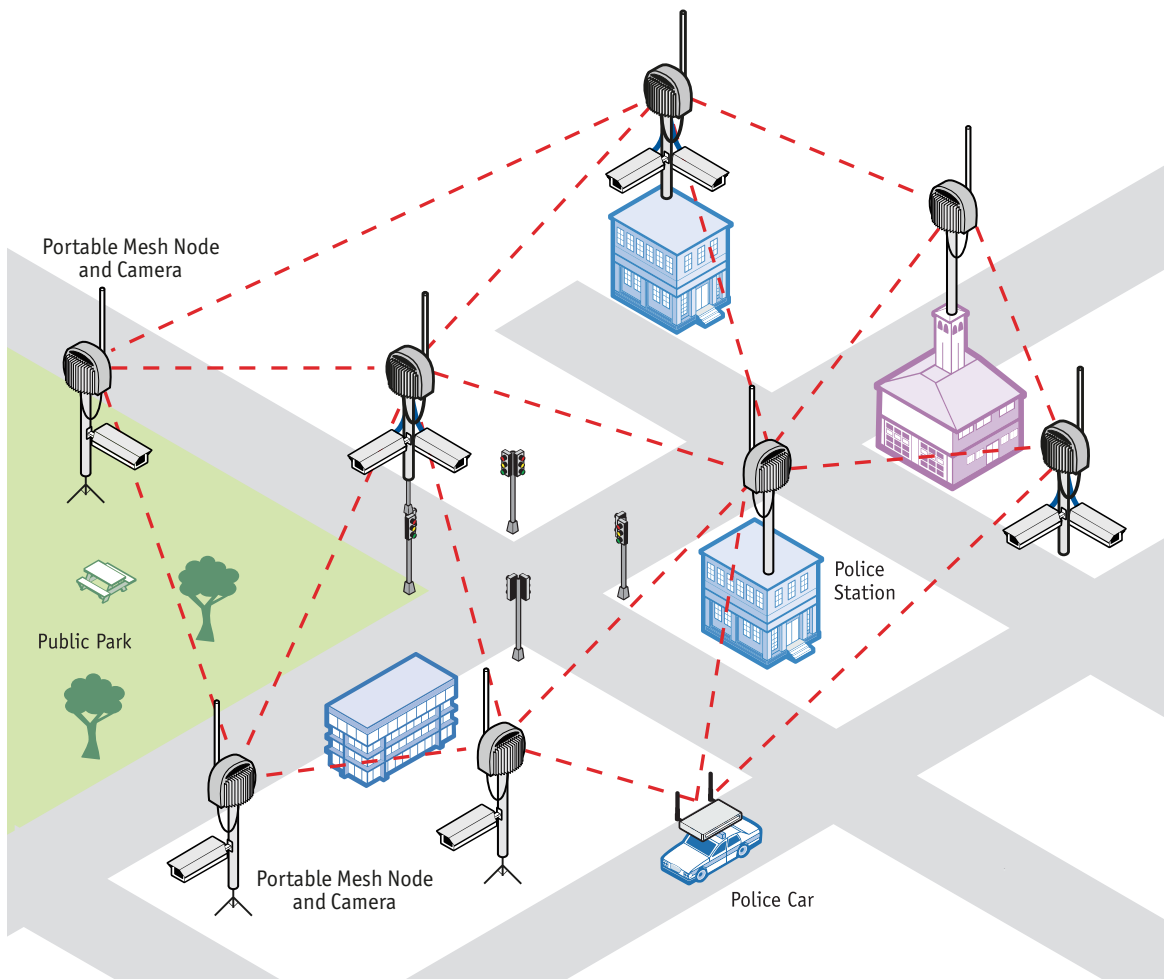
Video surveillance can save money while actually improving and increasing security. Video reduces the number of roaming security guards needed to cover large or remote areas while ensuring continuous rather than only periodic checking of each location. And because the mesh is wireless, the cost of trenching and pulling cable for cameras can be eliminated or significantly reduced. New networks can be fully operational in a fraction of the time with fewer installers and much lower installation costs. Increasing the amount of video surveillance can also lower insurance premiums, reduce liability, and make facilities safer for everyone.

"The Firetide-based solution is extremely cost-effective. We deployed the entire network in four developments for a fraction of the cost of a conventional monitoring system."

Lewis Jordan, Executive Director
Rockford IL Housing Authority

With a Firetide wireless mesh network you can:

- Install security cameras to monitor access to buildings, storage areas, and property perimeter.
- Instantly set up temporary surveillance networks for special events, remodeling jobs, and construction sites, and quickly remove them when no longer needed.
- Extend 24/7 video surveillance to remote areas and outdoor sites that are beyond the range of network cabling.
- Choose from a wide variety of enterprise grade IP cameras to accommodate any budget, security needs, or environmental considerations.
- Reduce security costs and improve staff efficiency by increasing remote surveillance.
- Provide surveillance and other networking services in older or historic buildings where drilling holes for cabling is prohibited or unsightly.



The Firetide HotPort wireless mesh network allows indoor and outdoor video surveillance without costly backbone cabling between walls and buildings. The mesh network forms itself and is self-healing. If one link is blocked or if a node is removed, the mesh will reroute traffic over a different path.

Public Safety

With their round-the-clock activity, facilities such as medical complexes, schools, college campuses, and hotels have a high volume of transient traffic. Firetide HotPort mesh nodes can cost-effectively extend surveillance capabilities for these facilities by providing network coverage of building perimeters, back sides of buildings, walkways between buildings, courtyards, information kiosks, and areas surrounding event venues.

HotPort mesh nodes can easily transport video streams between floors of a building, making a Firetide mesh network an ideal infrastructure for monitoring floors in hospitals, financial services offices, government buildings, public office buildings, and shopping malls.

"The benefits of wireless quickly became obvious: the mesh enables quick setup of the network without a complete overhaul, while providing excellent bandwidth and security for video streams."

Deputy Police Chief Tom Lawrence, Dallas PD

Transportation

Parking garages, bus stops, airports, and train stations as well as shipyards and freight areas are prime locations for expanded surveillance. However trenching and installation for cables to connect video cameras from these sites can be cost-prohibitive and limited to only those spots where cable can actually reach. Because they provide a wireless backbone, HotPort mesh nodes now enable camera installation anywhere, indoors or outdoors, on light poles, antennas, ticket booths, and billboards to increase network reach and monitoring effectiveness.



Custom-built enclosure with Firetide mesh node inside

Facility Monitoring

A Firetide instant network enables security cameras to be placed anywhere that it's necessary to monitor buildings and physical assets, such as in data centers, warehouses, shipyards and freight yards, storage centers, and shopping centers.

Recreation Areas

Firetide HotPort mesh nodes greatly simplify security network deployment for indoor and outdoor public facilities, enabling full surveillance for event venues, playgrounds, beaches, parks, swimming pools, sports complexes, walkways, and amusement parks. And because Firetide HotPort mesh nodes are portable and set up instantly, they are ideal for creating temporary security networks for concerts, festivals, fairs, and sporting events.

Moving Vehicles

Monitoring vehicles and their occupants is becoming increasingly important. Unlike traditional fixed wireless infrastructures, a Firetide HotPort mesh node can remain connected to the network even while it is moving. This makes it now possible for cameras installed in vehicles such as armored trucks, courier and delivery vehicles, taxis, buses, subways and trains to provide live feeds to the network.

About Firetide

Firetide wireless mesh networks provide "Reliable connectivity anywhere" for municipal, industrial and enterprise users. Firetide mesh nodes and access points deliver a high performance wireless infrastructure and access solution for Internet access, VoIP, video surveillance, and temporary networks wherever rapid deployment, mobility, and ease of installation are required.

For more information, visit www.firetide.com.



Firetide, Inc.
16795 Lark Avenue, Suite 200
Los Gatos, CA 95032
+1 877-FIRETIDE (toll free)
+1 408-399-7771
info@firetide.com