

# City of Phoenix

## Phoenix PD Keeps The City Safe With Firetide Wireless Mesh



### ORGANIZATION

City of Phoenix, Arizona

### TECHNOLOGY

Video Surveillance

### INDUSTRY

Public Safety, Law Enforcement

### PURPOSE

Increase public safety in Phoenix and provide evidence for criminal investigations

### SOLUTION

- Firetide wireless mesh network
- Axis security cameras

### DISTRIBUTOR

Anixter

### INTEGRATOR

Avrio Group

### MORE INFORMATION

[www.firetide.com](http://www.firetide.com)  
[www.axis.com](http://www.axis.com)  
[www.anixter.com](http://www.anixter.com)  
[www.avriogroup.com](http://www.avriogroup.com)

### Time Crunch

The Phoenix Police Department has pioneered use of wireless video surveillance for time-critical investigative deployments. “We had to deliver a surveillance system under incredible time pressure in the summer of 2006,” explains Chris Jensen, Detective with the city’s Drug Enforcement Bureau. “We needed video surveillance, and we needed it in a heck of a hurry.”

The Police Department had some experience with conventional analog video cameras connected via microwave links, but they knew it would not be possible to deploy a sufficient number quickly enough. Instead, the police turned to IP camera technology from Axis and wireless mesh networking from Firetide.

Anixter Security Systems, a nation-wide distributor of security and surveillance solutions, helped the Phoenix PD to identify Firetide mesh as the key tool for creating a robust, secure video surveillance network. Avrio Group handled the system integration and installation work, and also developed camouflaged camera hides for some locations.

Armed with the wireless technology, Phoenix PD was able to deploy a 30-camera surveillance network in record time. “It took us only 2 weeks from receiving the equipment to a fully operational network,” says Jensen.

### Adding Resources Without Increasing Manpower

The cameras connect to Firetide wireless mesh nodes. Together, the Firetide nodes form a resilient mesh network which can route around any RF or technical problems, thus guaranteeing camera connectivity. The mesh operates in the 4.9 GHz spectrum reserved for public safety use by the FCC to minimize interference from other wireless services. The mesh network connects to the city’s fiber network for backhaul to police headquarters, where typically two officers staff the monitoring room.

A key factor in selecting the Firetide system was its ability to handle high-quality video traffic from the cameras. The Phoenix PD wanted good images, good enough for reliable identification of individuals.

“Results have been impressive, especially in the quality of video the Firetide network supports,” says Jensen. “But it is not only about the bandwidth and image quality. We’ve increased coverage and saved on manpower: instead of 30 surveillance officers on the streets, only 2 are needed in a central monitoring station to cover the same geographical area.”

### Challenging Environment

Phoenix is a mix of 50-story high rises and low buildings, with scattered hills and mountain around it. It is a challenging RF environment. The reliability and performance Firetide delivered in this dense urban environment has been critical to the success of the project.

Avrio worked side by side with the police staff to ensure timely deployments and high performance. “Wireless mesh technology was the only option for the police department,

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given the time pressure during the initial deployment,” explains Mark Jules, President, Business Development, Avrio Group. “Since there is no cabling involved, the surveillance systems can be rapidly deployed in multiple areas, and then quickly moved for new investigation. We can also easily scale the network without affecting performance.”

The initial deployment consisted of 30 cameras and 45 mesh nodes, grouped into 7 interconnected mesh networks, and covered 5 square miles. Since the first deployment in the summer of 2006, Phoenix PD has used the wireless video surveillance to investigate three additional major crimes in the greater Phoenix area, along with complex conspiracy investigations.

### Lessons Learned

The Phoenix Police Department is building the model for future investigative deployments. They have learned valuable lessons that other public safety agencies can benefit from:

- Don't be afraid to deploy new technology, but partner with suppliers who will support you.
- Interagency cooperation is essential for rapid deployment.
- Consider the backhaul issues. Wired and wireless backhaul are both viable options.
- Once you have secured backhaul, speed of deployment of wireless mesh technology is rapid — each new node automatically joins the existing mesh.
- Police personnel will need some training. Learning curves will vary; allow for this in the training process.

There were pleasant surprises. The Axis IP cameras have pan, tilt, and zoom capability; the police were very happy with the smoothness and controllability of the cameras. The image quality was the most-remarked-on feature, however — the readability of car licenses and other evidentiary uses has been a big plus for the department.



*Pole Cam with Firetide node inside.*



*Outdoor mesh node and camera.*

### Next Steps

Police officers in cars, on foot, and at the video monitors work together by radio, and video can be forwarded from the system to laptops mounted in patrol cars. The department gets a multiplier effect in terms of surveillance and force; Jensen estimates the system is equivalent to 30 officers on the street.

Investigative video surveillance is only the first step in using wireless mesh technology. Next for the Phoenix PD is to research the use of wireless surveillance for crime suppression in high-crime areas, and as an officer safety tool. The police department is purchasing a RD (Rapid Deployment) Pole Cam portable solution from Avrio Group. Based on Firetide mesh technology, RD Pole Cam combines a high resolution IP camera and wireless mesh node all packaged in a single compact NEMA rated enclosure. This will allow officers to view video and fill out reports from the laptops in their cars or on handhelds.

“Whether it’s a drug crime, a homicide, or a homeland security concern, your best intelligence is going to come from the first line officers on the street. Any tool we can give them to make their job more efficient and allow them to gather more information will pay off multiple times for the major crimes we are investigating,” says Jensen.



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