



# InfiNet Wireless

## TECHNOLOGIES IN ACTION

### Live Demonstration Featured

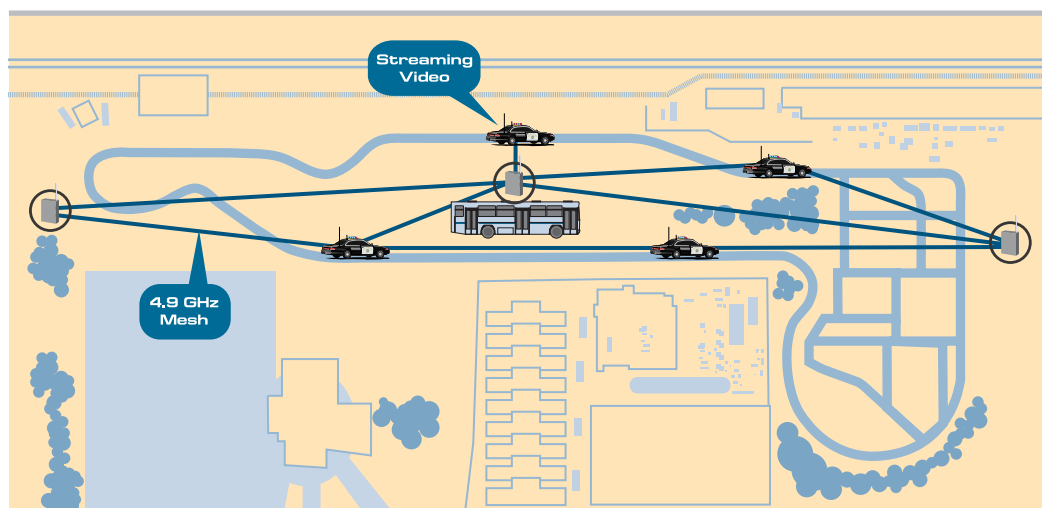
## Advanced In-Car Video Solutions for Law Enforcement Agencies

The Mobile Mesh Digital Video solution forms an instant mobile mesh network for peer-to-peer networking, allowing first responders to spontaneously form an ad-hoc broadband network at the scene of an evolving incident. Once enabled, several incident scene management applications including live, streaming video between mobile vehicles may be instantaneously utilized.

The Los Angeles Sheriff's Department (LASD's) Police Vehicle Test Day is an annual event that primarily focuses on vehicles themselves, with a testing process designed to address law enforcement officer's operational requirements.

In October 2006 the Public Safety Broadband Consortium\* demonstrated the use of live streaming video from vehicles traveling in excess of 100 mph during the LASD's Police Vehicle Test Day organized at the Pomona Fairplex, California.

The objective was to demonstrate advances in the use of wireless broadband technology for public safety officials.



The Consortium's live demonstration featured

- Lockheed Martin's In-Car Mobile Mesh Digital Video solution.
- InfiNet Wireless 4.9 GHz mesh routers in four state of the art police vehicles.

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During the Test Day demonstration, live video streamed to an infield audience of 400 plus attendees while vehicles negotiate the test course at speeds in excess of 100 mph. The streaming video was displayed on a large screen monitor in the viewing tent.

### KEY SOLUTION ELEMENTS

#### The Vehicle Video System

##### Anatomy of the Vehicle Video System

- Vehicles are equipped with high resolution digital video cameras.
- The Video Processing Unit (VPU) digitizes the analog camera signal, compresses it into MPEG4 stream, and sends it via TCP/IP to the Mobile Data Computer.
- The in-vehicle Mobile Data Computer (MDC) runs the Mobile Viewer software and stores video files. Officers use the MDC to view live streaming video from patrol car cameras, helicopter cameras, and fixed cameras.
- Video data upload to and from the vehicle is automatic. The Mobile Mesh router securely connects to the access point and uploads data from the vehicle VPU to the precinct's storage server. Data is downloaded through the router to the vehicle for viewing on the MDC.
- Officers carry wireless lapel microphones to record audio and remotely trigger video recording.

##### Mobile Mesh Video System Features

- Capability to support multiple cameras and microphones, including backseat camera.
- Integration of automatic video triggers including activation of microphone, light bar, siren, and shotgun rack release.
- 1/4 inch DSP color cameras that capture at 30 frames per second and feature automatic focus and white balance, sensitivity to low-light conditions, and 220x zoom (digital zoom 10x, optical zoom 22x).
- Camera controls that can be set either on the camera itself or through the MDC.
- Wireless microphone system that automatically scans between microphone and receiver.
- Microphone range of 1,000 feet from vehicle.
- Mobile Data Computer (MDC) touch screen user interface.

#### Back End System

##### 4.9 GHz Mobile Mesh Router for Incident Scene Management

The Mobile Mesh Digital Video solution includes a built-in Mobile Mesh router which operates on the licensed 4.9 GHz public safety band and provides a secure wireless infrastructure for emergency first responders and public safety personnel. The Mobile Mesh router forms an instant mobile ad-hoc mesh network, enabling several incident scene management peer-to-peer connectivity applications at an incident. These applications include:

- Live, streaming video between mobile vehicles at a emergency incident.
- Live, streaming video from neighborhood and business surveillance cameras to vehicle MDCs.
- Whiteboard for sharing maps, pictures, video frames.
- File-sharing between users on the mesh network: pictures, video, reports.
- Multimedia instant messaging between one or multiple people.
- Helicopter multicast video streaming to vehicle MDC.

##### Faster Video Downloading at Police Station Using Point-to-Multipoint (PTM) Protocol

- In-vehicle router automatically switches from MESH mode to PTM mode when in range of the Police Station.
- PTM mode utilizes collision-free, proprietary adaptive polling with dynamic bandwidth allocation which minimizes packets transfer.
- Video downloads are several times faster than the standard 802.11G Wi-Fi system.



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