

Customer Profile:



Kustom Signals, Inc., headquartered in Lenexa, Kansas, is a subsidiary of Public Safety Equipment, Inc., of St. Louis, Missouri. Since 1965, the company has been serving the public safety equipment needs of law enforcement agencies. Kustom Signals designs, manufactures and markets in-car video systems, traffic speed radar, lidar, and mobile roadside speed monitoring trailers.

“The officer doesn’t have to take anything out of the car. There’s no removable hard drive or tape. There’s no need to run an Ethernet cable. Nobody has to do anything. It’s a dedicated evidence network, untainted by the intranet within the agency.”

- Craig Cigard, Product Manager-Back Office Video, Kustom Signals, Inc.

Law Enforcement Agencies Use Rugged D-Link Access Points to Wirelessly Transfer In-Car Video to HQ Evidence Servers

The Challenge

Kustom Signal’s law enforcement agency clients needed to wirelessly transfer video from police cars to back office evidence gathering servers at headquarters. In the past, agencies used a mix of technologies – including VHS tapes, removable hard drives and wired Ethernet set-ups – to download video from the cars to computers inside buildings.



Headquartered in Lenexa, Kansas, Kustom Signals, Inc. develops products and standards that satisfy the requirements of the law enforcement and public safety community.

“A lot of our agencies don’t want officers touching evidence,” said Cigard. “When someone is pulled over for a DUI, for example, the video from the car system is evidence that either exonerates an officer [from a liability claim] or puts someone in jail. From both evidentiary and productivity standpoints, the agencies want to eliminate officer interaction with the video.”

Typical wireless data communication manages keystrokes, email messages or reasonably sized files maxing out at 5 to 10MB. This law enforcement situation is unique, however. Individual video files from the cars average 100MB and up, and there are a lot of cars coming in and out of the police stations. Each car takes at least an hour of MPEG1, MPEG2 or MPEG4 video per shift, and that file takes about 5 minutes to transfer from car to server. Using one access point as more cars pull up to the facility, the amount of time required for downloading doubles with every new car.

The old ways of transferring files were just too cumbersome and flawed. “We knew the agencies would be interested in wireless,” said Cigard. “They could see the advantages.”



Digital video evidence collection systems from Kustom Signals, Inc. allows you to reliably capture and store your evidence with the quality and integrity needed to stand up in court.

The Solution

Kustom Signal looked to D-Link for a rugged access point solution that could tolerate the heat, dust, and jarring activity of a police car, while also being easy to set up and maintain. They installed multiple D-Link DWL-2200APs on the outsides of police stations and outfitted each squad car with a client AP (same model). Kustom Signals has installed these APs in thousands of police cars since 2004. “With wireless, you usually design for coverage,” explained Cigard. “With these police download scenarios, we design for large simultaneous file transfers.”

The car AP hosts an embedded Microsoft Windows XP-based program that initiates an FTP session when the vehicle approaches headquarters. Video files are moved to the back office servers, into a database, and using RAID disks.

The officer drives up to the building, parks, and takes care of business inside. The wireless signal from the DWL-2200AP allows him to park in a general area. By the time he’s ready to head out, the download is done, and his in-car storage is ready for more video. “The officer doesn’t have to take anything out of the car,” said Cigard. “There’s no removable hard drive or tape. There’s no need to

Business Class Wireless



**DWL-2200AP High Speed 2.4GHz
(802.11g) Wireless 108Mbps¹
Access Point With PoE**

- Rogue access point detection
- Integrated Power over Ethernet (PoE)
- Also works as Wireless Distribution System (WDS), WDS with AP
- Supports 802.11i (WPA2), WPA-Personal, WPA-Enterprise, MAC Address Filtering, WEP Encryption, SSID Broadcast Disable

run an ethernet cable. Nobody has to do anything.” Productivity increases, and the agency gathers unquestionable, untainted evidence automatically. “It’s a dedicated evidence network, untainted by the intranet within the agency,” said Cigard.

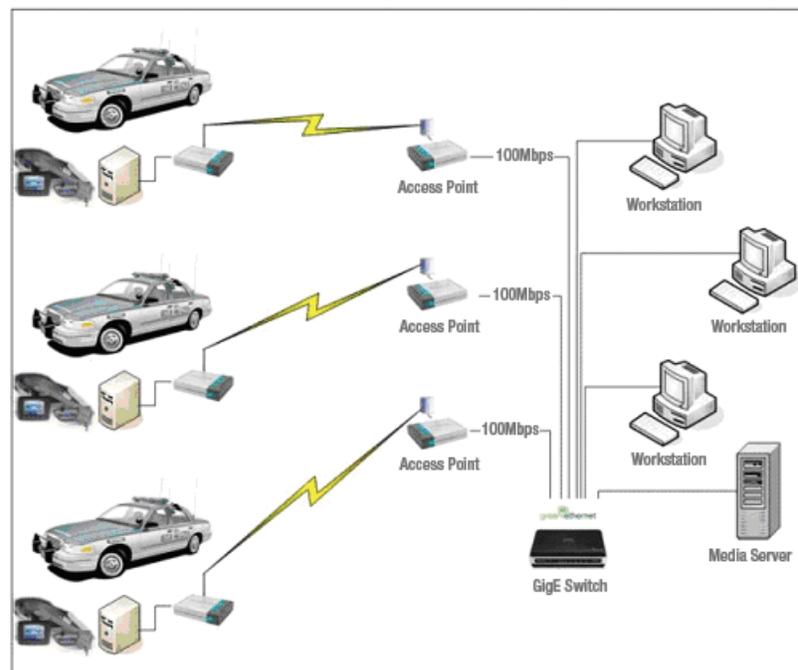
Kustom Signals uses the channel settings on the APs to separate traffic at the building. They’ll mount anywhere from three to five APs per side of the building. Their back-office application gathers, validates and verifies the video files then moves them to storage where they are searchable by time, date, officer name and so forth. Each car has 80GB drives for video storage. Back office storage is typically in the 10, 12 or 18TB range. Officers can easily locate videos, burn DVDs and then take the evidence to court.

The company uses custom code developed by their in-house development staff managed by Warren Page. The application pings the server behind the AP every three seconds, explained Cigard. When

they get a ping back, they know they’re connected. However, they perform the ping three more times to be sure they’re in the data transfer sweet spot. FTP is used to transfer the videos.

Hardware Stands Up to Cold, Heat, Dust and Extreme Driving Conditions

Kustom Signals went with D-Link APs because of their proven durability. “Initially, we looked at another brand,” said Cigard. “Then we started testing for heat, cold dust, dirt and humidity. These boxes get really hot. I had one that was so hot I had to hold it in my shirt. The D-Link APs survived while competitive equipment didn’t. That’s important, because these police cars are flying down gravel roads, in chases and over train tracks. They take a lot of abuse. The D-Link equipment survives it all. We’re really confident with the solution.”



D-Link's DWL-2200APs were installed to wirelessly transfer video from police cars to back office evidence gathering servers at the headquarters.

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¹ Maximum wireless signal rate derived from IEEE Standard 802.11g specifications. Actual data throughput will vary. Network conditions and environmental factors, including volume of network traffic, building materials and construction, and network overhead, lower actual data throughput rate. Environmental factors will adversely affect wireless signal range.

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