



COMPRESSION STANDARD

Most forensic video analysts say they would like to see an industry standard for digital video

Written by Gary Gulick

IT IS OBVIOUS TO ANYONE who ventures out in public: The security-camera or surveillance-video industry is in a booming market. There are cameras in every corner of our retail stores, entertainment centers, and office buildings—and it won't be long before they are on every corner of our big-city streets.

Is this fast growth in surveillance tied directly to 9/11 and a terrorist threat? No, not really. It is a combination of two elements:

1) A desire on the part of merchants to fight crime by deterring potential criminals and apprehending those who can't be deterred; and

2) The availability of cameras and recording equipment at prices which are more affordable than ever before.

Actually, it is the latter point—the affordability of the equipment—that has provided most of the momentum for the industry. The technology of surveillance video has changed dramatically in just the last few years, moving from analog images to digital data.

(For more on this aspect of the topic, see the interview that starts on Page 22 of this issue—Editor)

For some people, this change from analog to digital is good news. But for

others... Well, according to most experts in law-enforcement, it's not so good. It depends on who you are and what you are doing with the video systems' end-product—the actual recorded images. For those who are installing the systems in their stores or offices, it's good news because they can afford to use more cameras and cover more area. But for those in law enforcement who have to use the recorded images, it is sometimes less than good news, because of the way the systems' manufacturers have applied the new digital technology.

At this point, a little background might be helpful:

Analog video consists of images that are captured and stored as magnetic patterns on tape. The process is carried out according to one of several standards that have been in place for years.

Digital video, on the other hand, is relatively new, having been born as an offspring of computer technology. In order to assure the smooth and easy exchange of the recorded product, the video industries for consumers and professionals settled partially on a standard called DV25—which is shorthand for *Digital Video 25 Mbps*. (The *Mbps* stands for *megabits per second*—and it indicates how much data is streamed in a single second.)

According to Grant Fredericks, the manager of Avid Technology's Public Safety Video Solutions, this standard for digital video would be good for law-enforcement surveillance video.

"Images captured with 25 Mbps are accurate," said Fredericks. "They follow a standard that is universally used and is easily redacted. A forensic video analyst can examine images stored according to this standard and then process the images for trial. But you do not want to take the original images and then compress them any further."

Compression.

That's the problem that has been bugging video analysts recently.

In their desire to make affordable equipment, manufacturers of security and surveillance equipment opted to *increase* the compression ratio of the digital image—which essentially *reduces* the amount of information that is stored in memory. The reason they did this was simple: The storage of digital information can get to be very expensive. And, after all, they are in a competitive industry.

A security or surveillance system that can handle 7 megabits per second is often advertised as being adequate for a store-owner's needs. Some of the systems

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compress and store the image data at only 250 kilobits per second—which is about 1/100th the amount of the 25 megabits in the DV25 standard that was mentioned earlier.

“The move from analog to digital has significantly complicated forensic video analysis,” Fredericks said. “We would like to see the security industry adopt a standard for video recording and storage. We would like to be able to tell the industry that because compression does change and alter the image, law enforcement needs to have a standard that minimizes compression for video.”

Most of the manufacturers in the industry seem to be reluctant to accept the idea of a compression standard that every manufacturer would use. They say that such a standard would tend to stifle the development of new technology in a free-enterprise environment.

“To some degree,” said Fredericks, “they are right. It might slow down the advance of video technology. But that doesn’t help the forensic video analyst. When we go to trial, we have to be able

A standard for digital-video compression would be a big help for those in law enforcement who are charged with the responsibility of analyzing surveillance videos that involve possible evidence of criminal activity.

to satisfy the court with regard to the quality of these images. We must be able to state unequivocally that the images we present are accurate and that the science used to develop that particular video evidence is accepted by the relevant scientific community.”

Even though forensic video analysts would like to see a standard, it does not look like there will be one in the near future. The industry seems to be adamant

about refusing to set a standard. Perhaps they do not want to be forced to give up their proprietary compression formats and software programs. Perhaps they just do not want to face the rugged competition that would come with a standard compression.

There are some possibilities, of course. The federal government could step forward and mandate the establishment of a standard for surveillance systems that generate images—images that are used by law enforcement in the investigation of crimes and the subsequent trials of alleged criminals. How would such a mandate be handed down? Probably by simply saying that certain federal funding will not be available unless a video surveillance system is able to meet the federal standard.

It might happen.

In the meantime, video analysts with law-enforcement agencies will have to continue their studies and their hard work in getting the end-products of various digital-video systems to yield the evidence needed in court. ☺



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