

The Video Surveillance Problem

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“What to store or what not to store? That is the question.”



Video surveillance is everywhere today, and the rise in camera deployments is making a big financial impact on the public and private sector's IT departments' operating expenditures. Storage costs are the main culprit and can add up to 50 percent of the cost of a new surveillance installation. At face value, the growing number of cameras, the move from standard-definition video to high-definition (HD) video, higher frame rates and federal requirements to store surveillance footage for longer periods of time are all driving this insatiable need for more storage space. The migration to HD video alone increased storage capacity requirements by as much as two to three times. The real storage issue isn't caused by the camera or "content creation" side but on the storage side. The issue is that the industry streams and stores surveillance video 24 hours a day, 365 days a year regardless of what is happening in the field of view of the camera causing wasted storage space.

Video analytics is the first technology that has the ability to address the real underlying problem of what to store and what not to store. With the ability to isolate, classify and track objects within surveillance footage comes the ability to better understand whether there is value in streaming and storing at each moment in time. If there is no activity of a specified nature in the field of view of the camera 50 percent of the time, then there is a potential storage savings of 50 percent. The ability to define objects, activities and areas of interest using video analytics is extremely powerful. Unlike traditional motion detection solutions, video analytics can be used to "look" for objects of a pre-defined type and only in specific areas.

The standard surveillance system today encodes/streams and stores at a fixed resolution and frame rate regardless of the ongoing activity within the camera's field of view. More advanced approaches have integrated video analytics and use motion detection or other rules to try and determine the appropriate action to be taken. These systems typically stream only when motion or an event is detected.

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Unfortunately, video analytics are not fool-proof, and failing to capture a significant event is equal to not having a surveillance system. The most optimal architecture should include the ability to encode and continually stream surveillance footage full time but at a rate and resolution which is appropriate for the type and amount of activity within the camera's field of view. To help outline the differences in the approaches of the two systems, Figure 1 illustrates the traditional approach of encoding/streaming at a fixed resolution constantly, and Figure 2 highlights encoding/streaming at an appropriate rate as a solution to the video surveillance storage problem.

Figure 1

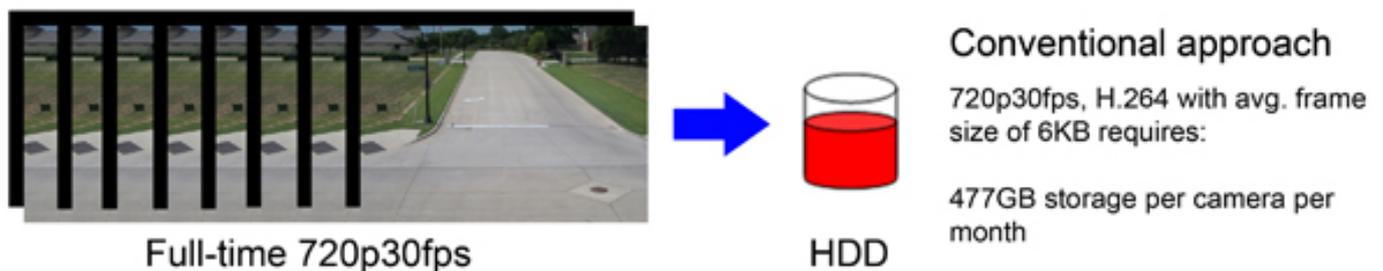


Figure 2 conservatively demonstrates how to achieve a 25 percent reduction in storage requirements while still maintaining continuity in the surveillance footage. This approach ensures that even with a potential error with the video analytics, there is not a total loss of forensic evidence.

Figure 2



When you scale up both approaches, like in the extreme case of the 2010 World Expo in Shanghai where 200,000 HD surveillance cameras were installed, the impact would be a staggering 23.9 petabytes of storage capacity saved when a customer uses Figure 2.

Customers can solve their storage problem by using TI's DMVAx generation of processors in conjunction with TI's Smart Codec Technology as seen in Figure 2.

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