

# Public Safety Video: A Strategic Plan for Success

As agencies deploy more cameras, the right solution for video management, analytics and storage is essential for operational effectiveness.



✓ Public safety agencies are increasingly deploying cameras of all types to improve accountability.

✓ The expansion of video also reflects agencies' interest in proactive policing and using analytics to improve community safety.

✓ Despite these advantages, video presents many storage-related challenges.

**This white paper presents seven key questions agencies should consider to help them maximize the use of video at an affordable price point, and develop a well-defined strategy for video storage, analytics and management.**

## Cameras Are a Critical Law Enforcement Tool

“What does the video show?” This is a question commonly posed by the media, the public, elected officials and law enforcement agencies after an officer and a citizen engage in an encounter that merits special attention. To protect themselves and the citizens they serve, public safety agencies are deploying cameras of all types, including body-worn cameras, dashboard cameras, license-plate readers, fixed surveillance cameras and even drones.

Increased scrutiny may be part of the reason why, in a June 2015 Center for Digital Government (CDG) survey of 143 state and local public safety officials, IT decision-makers and elected officials, respondents said accountability was their No. 1 reason for expanding the use of video, followed by public interest and the need to comply with government mandates.

Despite this, plans for broader use of video aren't solely a reaction to the widely reported recent encounters between police and citizens. They also reflect public safety agencies' interest in proactive policing and a desire to leverage video and analytics to be more prepared and responsive, both for specific incidents and overall community safety.

Law enforcement leaders are quickly discovering that integrating video files from multiple sources with analytics tools can help them solve crimes and locate offenders more quickly, as well as provide situational awareness and even prevent incidents through timely officer dispatch.

## The Need to Cost-Effectively Store, Access and Analyze Video

Despite the many advantages of video, the volume of files generated by more cameras presents a tremendous challenge to agency IT departments for managing storage capacity:

- Regardless of where they store them, agencies must protect and manage video files for defined, sometimes lengthy retention periods.
- Stored video must be secure yet accessible to numerous authorized users from multiple agencies.
- Video surveillance files from business and residential cameras and cell phone videos used for investigation

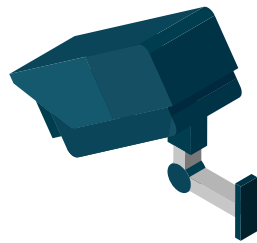
and prosecution purposes also need to be stored, searchable and accessible.

- Video analytics tools must be interoperable with storage systems.

Although many large agencies already have on-premises storage and video management systems for current cameras, those solutions may not support new camera types or increased video volume. For example, the Oakland Police Department generates 7 terabytes (TB) of video per month from the 600 body cameras deployed.<sup>1</sup> To put this in perspective, 1 TB of data is roughly equivalent to 500 movies.<sup>2</sup> And with only 11 body-worn cameras deployed, the Duluth, Minn. Police Department stores between 8,000 and 10,000 videos per month.<sup>3</sup> These numbers may seem high, but they are easy to reach even if body cameras only record all traffic stops, which is the plan for 37 percent of CDG survey respondents.

Public safety leaders are acutely aware storage will be an ongoing challenge for their agencies as they incorporate video into everyday policing. In ranking their challenges for implementing a video program, CDG survey respondents listed overall costs, storage issues and sharing video as public records (which impacts retention periods for storage) as their top three concerns.

The survey respondents commented, “Video data is taking more storage than was projected” and “[We] always seem to be running out of room.” Another respondent explained, “As we added HD cameras, the need for additional storage capacity versus less retention time has become



### The Use of Video in Public Safety

- Fixed surveillance (**58%**), dashboard (**38%**) and traffic (**36%**) cameras are the most widely used types of video in public safety.
- **37%** use video to monitor traffic stops; **33%** use it to record crime scenes; and **32%** use it to detect suspicious behavior.
- The **No.1** benefit of video is increased accountability.

Source: CDG Research Survey, “The Role of Video and Cloud in Public Safety,” June 2015

an issue due to limits on spending. [However], this is more a short-term issue as funds are allocated for ongoing system upgrades.”

## 7 Strategic Questions for Storing and Managing Video

To maximize the use of video at an affordable price point, agencies will need a well-defined strategy for video storage and management. To develop an effective strategy, public safety agencies should thoughtfully and thoroughly answer the following seven key questions.

**1 How will each type of camera be used?** A thorough assessment of operational needs, community expectations and budget will create a more suitable plan for which types of cameras should be used and where. When deploying a new camera type or accepting a new type of video, it’s a good practice to evaluate current camera usage. This evaluation will give an agency the information necessary to identify the most strategic use of cameras and video now and in the future.

**2 What are the retention requirements?** A “one-policy-fits-all” retention plan is unnecessarily expensive and doesn’t effectively support an agency’s operations and mandates for evidence management. More likely, an agency will need a retention plan with distinct timeframes for different types of video files. This plan will need to accommodate longer timeframes (i.e., multiple years) for retaining video evidence, as well as shorter periods (i.e., 90 days) for video not related to a case, but which documents an incident related to a citizen complaint.

**3 Where will video files be stored?** Large law enforcement agencies have traditionally had the server and storage system capacity to keep all video files on-premises. However, the volume and size of body camera and other new types of video files may quickly exceed an agency’s internal storage resources, prompting a consideration of cloud services. A storage solution should also scale to accommodate shifts in video volumes.

**4 How will video security and integrity be protected?** An agency should identify the necessary measures for integrity and security so video files can be

admitted as evidence in criminal, civil or internal cases. Technology can also help agencies maintain appropriate chain of custody as well as cybersecurity protection against inappropriate video access, modification, forwarding, deletion, copying or public release.

**5 Who will need access to video files?** It’s important to determine what types of access controls need to be in place so video files are only available to authorized personnel. The storage access method may also need to support external users, such as prosecution staff or investigators in other agencies.

**6 How will video analytics be used?** Certain analytics tools can automatically search video files for information, such as the location or activity of a suspect. Stored video files should integrate with analytics tools as well as systems for computer-aided dispatch, license-plate reading and gunshot detection. This integration will make it easier to derive real-time intelligence that directly helps first responders at a scene.

**7 How will the video program be funded?** In 2014, the city of Baltimore put its planned body camera program on hold partly because of estimated annual video storage costs of \$2.6 million.<sup>4</sup> Yet even with their concerns about costs, nearly 40 percent of the CDG survey respondents indicated their spending on video solutions will increase between 2015 and 2020.

Any video program will involve capital budgets for the initial purchase of cameras and batteries, a video management system, and servers and storage systems if video files will be stored on-premises. Ongoing operational costs will include program management, camera replacement and increased storage capacity, whether on-premises or in the cloud.

Funding to cover these expenses may come, in part, from reallocating current budgets; issuing a technology bond; designating special fines; or receiving grants from federal, state or private sources. Costs may also be offset by lower expenses related to citizen complaints, trials and lawsuits. For example, in a year-long field test of body cameras conducted by the Rialto, Calif. Police Department, officers’ use of force dropped 60 percent and complaints against the police fell nearly 90 percent.<sup>5</sup>

## Understanding the Technology Options for Video Storage

The capacity demands of video are prompting public safety agencies to review their options for storage. There are three models to consider: on-premises, cloud or hybrid. All of these models may be viable options for an agency, although certain policies or laws may need to be modified to allow the use of cloud services.

Because of the costs and management capabilities involved, this option is often more suitable for larger agencies. For instance, capital expenses may be high if the IT department chooses to implement more servers and storage systems than are necessary for immediate needs to have the capacity in place for more video files in the future.

In the **cloud model**, all video files are stored in a provider's data center; the agency doesn't need to maintain on-site servers or storage systems for this purpose. Instead, an adequate Internet connection is used to upload and download video files and manage video storage.

The cloud can be an appealing alternative or supplement to internal video storage:

- This option requires minimal capital expenditures, but may require more operational expenditures in the form of service fees that increase as more storage capacity is used.
- Because all equipment, software and technology management are handled by the provider, this model is particularly attractive for agencies with limited in-house IT resources and expertise.
- The cloud model is flexible, so an agency can easily scale storage capacity at any time and pay only for the capacity it uses.

It's important to partner with a cloud provider who has experience with public safety agencies and can allay concerns regarding security and privacy. Many government agencies find the cloud can be even more secure than on-premises environments when the provider meets FBI Criminal Justice Information Services (CJIS) Division standards for data center security.<sup>6</sup>

The third option is a **hybrid model** that combines on-premises and cloud storage to meet an agency's unique circumstances. For example, an agency may choose to keep videos for active investigations on-premises, but use the cloud to store videos requiring long-term retention. Cloud services can also provide backup storage or overflow capacity when demands exceed internal resources.

### Video in the Cloud

In the CDG survey, 57 percent of agencies reported they do not currently store video in the cloud. However, this percentage is likely to decrease as agency needs for video storage capacity exceed levels that can be cost effectively maintained in house.

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Interestingly, CDG survey participants see similar factors as both benefits and barriers to using cloud services for video storage. For cloud benefits, the respondents listed accessibility, cost, security and the ability to better manage legal compliance and record retention policies.

Yet respondents also cited three of these factors — security, cost and legal compliance — as barriers to using cloud-based video storage. These responses likely reflect the different operational expectations, requirements and budgets that can be found across any diverse set of law enforcement agencies.

In the **on-premises model**, all files are stored in a data center the agency owns and manages. The capacity of servers and storage systems must be sufficient to store the anticipated volume of videos for the appropriate retention periods. Additionally, the data center design and facility should scale as needed to accommodate more storage as the agency leverages additional cameras and video files in everyday policing.

## Video Analytics for Safer Communities


Once agencies have a plan for effectively storing and managing video data, they can then maximize their data through predictive analytics. The combination of stored video and predictive analytics gives agencies actionable information to enable more effective proactive policing through:

- Public-private partnerships for video surveillance, reducing the need for officer patrols in low-crime areas identified through data analysis
- Support for real-time monitoring centers that enable agencies to quickly spot patterns and better direct officer response to high-priority crimes and incidents<sup>7</sup>
- Automated searches through numerous hours of video footage, collected from multiple sources, to find critical images and data for solving crimes
- Recognition of trends indicating when an area or type of criminal activity needs more attention from the agency

These benefits are particularly valuable in light of the staffing constraints many agencies face due to tight budgets, voter reluctance to approve tax levies or bond issues, and difficulties in recruiting officer applicants.

## Making the Right Choice for Your Agency

Video can bring many benefits to law enforcement agencies and the communities they serve as long as technology decisions aren't made in haste. Creating a



**Austin PD Targets Video Surveillance for Crime Reduction**

The police department in Austin, Texas, placed digital surveillance cameras in targeted city areas to monitor activity in real time, provide potential evidence of crimes and support public safety goals. “We saw [the cameras] as a way to proactively ... aid our officers in surveillance, crime deterrence and emergency response,” says Troy Gay, assistant chief of police.<sup>8</sup>

Along with analytics software, the camera program will be audited each quarter to determine results for:

- ✓ Disruption of crime patterns in “hotspot” areas
- ✓ Identification of criminals and criminal activity
- ✓ Confirmed cases of video evidence used to assist in prosecutions
- ✓ Protection of citizens’ constitutional rights

Real-time video monitoring allows the department’s crime center to provide immediate support to nearby officers. “This is crucially helpful to identifying subjects and locations ... and to [help our officers] go into a situation much better prepared,” says Gay.

strategic plan for video storage, management and analytics will help an agency achieve the right balance of technical capabilities versus costs that will support the success of video policing programs over the long term.

## Endnotes

1. *Government Technology*, “Body Worn Camera Data Storage: The Gorilla in the Room,” <http://www.govtech.com/dc/articles/Body-Worn-Camera-Data-Storage-The-Gorilla-in-the-Room.html>
2. PC Ninja, “How much can a 1 TB external hard drive hold?” <http://www.pcninja.us/how-much-can-a-1-tb-external-hard-drive-hold/>
3. *Government Technology*, “Body Worn Camera Data Storage: The Gorilla in the Room,” <http://www.govtech.com/dc/articles/Body-Worn-Camera-Data-Storage-The-Gorilla-in-the-Room.html>
4. Ibid.
5. *Government Technology*, “For the Record: Understanding the Technology Behind Body Worn Cameras,” <http://www.govtech.com/dc/articles/For-the-Record-Understanding-the-Technology-Behind-Body-Worn-Cameras.html>
6. FBI CJIS Security Policy, <https://www.fbi.gov/about-us/cjis/cjis-security-policy-resource-center/view>
7. *The Seattle Times*, “When Seattle crime spikes, high-tech eyes now watch,” <http://www.seattletimes.com/seattle-news/crime/with-high-tech-seattle-police-to-track-crime-in-real-time/>
8. Hitachi Data Systems, “Austin Police Deploy Hitachi Solution to Serve and Protect with Greater Visibility and Connected Intelligence,” [www.hds.com/assets/pdf/hitachi-success-story-austin-police-department.pdf](http://www.hds.com/assets/pdf/hitachi-success-story-austin-police-department.pdf)



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