Solving the Retention Dilemma: Intelligent Archiving for Surveillance Data

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I. Executive Summary

In the United States alone, there are more than 30 million surveillance cameras shooting over 4 billion hours of footage a week[1]. Diverse companies and organizations around the country use surveillance cameras to observe activity and monitor behavior. Regardless of the intent or purpose behind the surveillance camera, every organization must have a method in place for managing video content. In many states, legal policies require video surveillance data to be stored for extended periods of time—often up to a year or more. As digital data management regulations continue to grow, storing surveillance data ensures that an organization can defend itself in the face of legal or requirement inquiry, or simply continue to carry out its day-to-day operations without significant IT or monetary burdens.

How does a company improve its data retention time and instill smart practices for exporting, storing and retrieving digital content? Enter **Intelligent Archiving**. In this white paper, we address the surveillance data retention dilemma and present an innovative approach to offloading, storing and distributing surveillance data.

Intelligent Archiving: An approach that gives organizations large and small automatic control over their digital data, resolving the retention dilemma.

1. Milestone White Paper: Best Practices in Video Surveillance Storage

II. The Retention Dilemma

Video surveillance systems place a high demand on storage. With a growing number of digital surveillance cameras and increased image quality, along with complicated retention requirements, organizations are facing critical data management and archiving strategy challenges. Every organization that uses a surveillance system is forced to address a burning question, "What do I do with the buildup of surveillance data? Do I create additional storage capacities to house it, or do I get rid of it?"

Organizations simply cannot afford to purge their video surveillance records or suffer the consequences if data is tampered, lost or destroyed. In most retail stores, for instance, a victim has 180 days to file a claim about a particular incident that occurs in any given store, (e.g., a slip and fall case). If the retailer does not retain its video data for this amount of time, they could potentially be exposed to a claim that they are not able to defend by video—an extremely risky and costly situation.

Beyond retail, many diverse businesses and organizations, such as governments, banks, education institutions and corporate offices, must have systems in place to retain their surveillance data, and one single organization can have two different quantities of surveillance data: a large percentage of non-critical data that needs to be stored for short periods of time (e.g., a few months), and a small percentage of critical data that must be retained for the long-term (e.g., years or decades). Furthermore, regulations mandate that the surveillance video footage not only be saved in a standard, original format, but it must also be retrievable in the same condition as it was captured.

The combination of short and long-term surveillance data on one system compounds the data retention dilemma. Now, the question is not only, "What do I do with my surveillance video data," but it becomes, "How do I accurately discern short-term, non-critical surveillance data from long-term, critical data and store them efficiently and cost effectively?" The answer to this question is **Intelligent Archiving**. In the following sections of this white paper, we present **Intelligent Archiving** as an approach that gives organizations, both large and small, automatic control over their digital data, resolving the retention dilemma.

III. What is Intelligent Archiving?

In order to simply meet retention requirements, many organizations have been using their traditional data storage methods, such as tape and hard drive backups, or placing physical hard drives on a shelf. However, these methods can be outdated, costly and unreliable. While conventional methods can get the storage job done, **Intelligent Archiving** is an all-in-one approach that integrates with existing surveillance workflows to provide a streamlined, **automated data management tool**. Intelligent Archiving reduces costs without purging data, ensuring that surveillance data is:

- Automatically stored in its original, intended format to guarantee authenticity
- Easily accessible and retrievable
- Selectable by camera to discern between active and inactive data
- Indelibly labeled for professional distribution

Blu-ray Media: The First Component of Intelligent Archiving

Optical disc storage plays an influential role in establishing and maintaining the accuracy and reliability of digital data. Blu-ray discs were developed to meet the capacity demands of high-definition video and have long been the champion in the video media industry. As a result, this technology is a foundation upon which Intelligent Archiving is built.

Traditional tape/hard drive technology and complicated manual data back-up processes do not stand up to the demands of video surveillance storage. Magnetic tape is sensitive to environmental conditions, highly volatile and is not portable or distributable. Although hard drives are relatively inexpensive to acquire, HD retention capabilities are unreliable, making it a costly archive solution in the long run. For instance, 1TB hard drives are designed to be consistently powered on in order to check and authenticate data. While an HD archive sits unpowered on the shelf, without automatic self-correction, video data stored on the drive is susceptible to loss and uncorrectable errors. Compared to these conventional storage mechanisms, Blu-ray technology delivers the longest lifespan, best security and least risky migration capabilities for video media—making it the only fully complaint, true archiving technology and the industry choice in digital storage.

True Archiving Technology

- **Durability:** The surface of Blu-ray media is protected by hard coating, making discs resistant to scratches and fingerprints without compromising the traditional look and feel.
- **High Performance:** Video data stored on Blu-ray can be searched for and randomly accessed with uncompromised speed. Blu-ray access times are 200 milliseconds, and BDs have the potential to acquire even higher speeds in the future.
- **Future-proof:** Due to the WORM (Write Once Read Many) media structure, data that is written to a Blu-ray disc is permanent and likely to last longer than any CD or DVD. In addition, the technology is supported by hundreds of world-wide organizations. Blu-ray media and drives to read it will be available years into the future to fulfill the nation's growing compliance requirements.
- **Go Blu to Go Green:** Blu-ray technology is well suited for archiving infrequently accessed or static information, meaning that disc drives only need to be powered on when video data is being written or read—a quality that is efficient in both energy and cost. Plus, Blu-ray has a TUV certification of 'B', making it the lowest energy consumption of all data storage technologies.[2]

The Architecture of Intelligent Archiving – Export, Distribute and Archive

Blu-ray's superior storage capacity, durability, permanence and overall performance capabilities have paved the way for new approaches to archiving. One of the most significant of these approaches is Intelligent Archiving.

In order to answer the retention dilemma and fill the need for a streamlined, automated exporting and archiving tool for surveillance

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Blu-ray Quick Facts:
- A single layer Blu-ray disc can hold 25GB of data, a dual layer disc can hold 50 GB
- Up to 9 hours of high-definition or 23 hours of standard-definition video can be stored on a 50 GB Blu-ray disc
- A single dual-layer 50 GB Blu-ray disc can hold the same amount of data as 10 DVDs
- Blu-ray technology is extendable, and includes support for multi-layer discs
- Blu-ray has a data transfer rate of 4.2MB bytes per second
- Blu-ray has a lifespan of 50+ years
- Blu-ray's increased storage capacity provides low cost per TB

2. Blu-ray Jukebox website: http://www.blurayjukebox.com/optical_archiving.html

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data, a solution must incorporate software and hardware technologies. Therefore, the architecture of Intelligent Archiving is multi-leveled. Building off of Blu-ray technology, this approach recognizes the need to integrate intelligent software with robust hardware capabilities in order to seamlessly automate the surveillance export, delivery and archive process. The result is a hands-free operation that cuts labor and errors, decreasing the amount time and money that is spent on managing complex business processes. All the while, zero surveillance data needs to be destroyed or purged.

> **Export:** While the surveillance data exporting process can be done manually, with individual PC disc burners, for example, managing video content by hand is a security risk that often results in errors, potential loss of data or video hijacking. With the Intelligent Archiving approach, a software component is first used to discern critical incident data that can be immediately exported from the surveillance system. Second, the hardware mechanism ensures that one or many video clips are automatically exported to Blu-ray discs. An automated export process ensures that data is properly managed, includes a viewer on the disc and a reliable backup management system is in place.

> **Distribute:** The optical disc is the only modern media type that has enough space on the surface to clearly and permanently print the recorded content. As a result, Blu-ray discs containing exported content are inherently ready to be clearly and professionally delivered as necessary.

> **Archive:** By nature of the Blu-ray media, discs containing exported content are ready to be used for long-term and secure shelf archive. The Blu-ray technology ensures that the lifespan of the video content and the tools used to read it are viable now and into the future. Data on Blu-ray media is fully compliant, access times are efficient and data retrieval is cost effective.

Intelligent Archiving recognizes that the frequency of surveillance video recall declines over time. Not only does this approach ensure that the scope of an organization's video storage plan is smart and secure both now and for the future, but it enables the user to select which camera data sets they want to permanently archive, giving users ultimate control over the retention dilemma. By using the Intelligent Archiving approach, an organization can choose which data is important to keep online and what can be immediately sent to archive, extracting important incidents and storing the rest.

IV. Conclusion

Whether it's to comply with regulatory compliance and internal standards, manage evidence or to avoid claims, theft or vandalism, organizations of all varieties simply cannot afford to lose surveillance data. Video content must be centrally managed in order to ensure safe, long-term storage, easy accessibility, and random future playback, while also providing seamless organization. Intelligent Archiving is structured to solve these critical content distribution, management and long-term archiving needs. Not only is the approach designed to provide an automatic video archiving tool that protects critical information, but it is a smart exporting resource that gives users ultimate control over surveillance data management.

In this paper, we've discussed the architecture behind Intelligent Archiving. Rimage's Surveillance Solution is an all-in-one model that provides all the benefits of this intuitive archiving approach. End users who have a volume of surveillance incidents and need an automated tool for professional distribution, as well as those who have defined data retention requirements and need to retain video content for long periods of time, can maximize their time and budget investments with Rimage's Intelligent Archiving solution.

Rimage has long been a leader in delivering best in class standards for direct-to-disc thermal printing and workflow-integrated digital publishing solutions, and Rimage software modules have the flexibility and power to integrate into almost any workflow and business process. **Surveillance Publisher** and Rimage **Surveillance Archiver** completely automate the process of exporting content for publishing and managing long-term archiving on Blu-ray and/or DVD media. Surveillance Publisher is a streamlined data distribution process that quickly exports surveillance video. Surveillance Archiver shrinks active content by automatically archiving historic content on a set schedule, based on size or date and time criteria. Both components capture and print video meta-data directly to the disc for easy identification, automatically span large datasets to multiple discs, and ensure that exported/archived content can be viewed on any Windows based computer with a DVD or Blu-ray reader.

According to recent research, the video surveillance market is expected to tipple by 2012, with global storage requirements reaching more than 3.3 exabytes (3,300 petabytes).[3] For every organization that utilizes video surveillance, a loss of digital data can result in a loss of vital business information, credibility, and ultimately, a loss of competitive value. Intelligent Archiving provides a scalable approach to video data exporting and archiving, protecting digital assets and ensuring business viability now and in the years to come.

How the Rimage Surveillance Solution Works:

1. Network video recorder (NVR) collects digital camera data.
2. Incidents are selected and exported to labeled DVD or Blu-ray Discs.
3. Storage or time threshold is reached in the NVR.
4. Data is automatically sent to Blu-ray Discs for archive.
5. Discs are indelibly labeled for evidentiary use or recall.

www.rimage.com/solutions/surveillance

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3. **QSTAR Technologies:** http://www.qstar.com/

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