



StorNext & Scalar Series

Calgary Police Manages Influx of Surveillance Video with StorNext Petabyte-scale Storage System

Faced with managing content for a new body-camera program, the Calgary Police Service braced for a massive influx of new surveillance video. The department found a creative solution that leveraged their existing Quantum LTO library that was just being used for backup. By adding StorNext Scale-out Storage, they were able to partition their library and add automated tiering for a high-capacity, economical, and highly scalable surveillance solution—all at half the price of expanding their existing disk solution.

When the IT department of the Calgary Police Service learned about a new program for body-worn video cameras—that would start with 50 cameras and then grow to over 1,500—it realized its current storage system wouldn't be able to keep up. The new cameras generated 2.3 gigabytes per hour, or 18.4 gigabytes per shift, meaning the IT team would need to build a new solution to handle the almost one petabyte of video content the department would soon be managing.

MORE CAMERAS, LONGER RETENTION TIME CREATE A PETABYTE-STORAGE CHALLENGE

The Calgary Police Service had launched a dashboard camera program a year earlier that was only retaining content for 30 days—and it was already filling up all the disk space. There was so much content that the IT department had already given up on using conventional backup—there wasn't enough time to complete the backups. The team knew it would need a different approach to be able to store all the video files from 1,500 body cameras for at least 13 months. And if any of the files were used in a court case, they would need to be retained for a minimum of 7 years, 20 years for a serious crime, and 40 years in any case involving terrorism.

"A quick calculation showed that we could expect to gather nearly a petabyte of video data in the first year," says Corey Dunn, Technical Services Manager. "And we knew it could easily be more if we shifted to higher-resolution video formats or had to lengthen the retention. The scale-out NAS disk we had been using for dash cams was simply too expensive to even consider."

CONSOLIDATING BACKUP AND ARCHIVE WITH EXISTING INFRASTRUCTURE

Faced with an overwhelming data problem, the IT team discovered that it could build a solution that would meet the new needs and keep costs low by expanding an existing resource and adding a new high-performance ingest solution and auto-tiering software that could manage video content.

"One of the coolest things about this project is that it let us add StorNext® and expand an existing resource rather than having to start from scratch," explains Dunn.

The Calgary Police Service had been using Quantum Linear Tape-Open (LTO) libraries for more than a decade. With its new data storage needs, the IT team decided to upgrade to an enterprise Scalar® i6000 library to support expanded uses. By partitioning the library into two virtual libraries, it could support multiple applications. One virtual library now serves as a target for the department's backups, using Quest vRanger for virtual machines and Legato NetWorker for physical data. A second virtual library in the same chassis is used as a video archive—thanks to the right data management software.

DEVELOPING A SIMPLE, COST-EFFECTIVE VIDEO STORAGE STRATEGY

Looking for a video archive solution, the Calgary Police Service talked to companies and integrators that were accustomed to handling large amounts of media data—eventually selecting Quantum StorNext. The reasons were straightforward. StorNext is specifically designed to manage large files, such as videos, and large numbers of files. It automatically moves data between different



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SOLUTION OVERVIEW

- StorNext data management software
- StorNext primary disk storage
- Scalar i6000 tape library with dual robotics, archive license, encryption, Scalar Key Manager, and EDLM

KEY BENEFITS

- **Reduces cost of long-retention video surveillance storage** – Using an intelligent multi-tier approach that combines backup and archive storage dramatically reduces overall costs and allows for higher scalability—typical systems are half the cost of disk-only storage.
- **Provides fast, shared access to stored data** – With StorNext, all the data in the system—no matter where it is located—is available directly to users through a standard file system interface.
- **Automatically protects data** – StorNext policies automatically create multiple copies, providing on-site protection and duplicates for off-site disaster recovery storage. The Scalar library encrypts data and proactively monitors media to ensure data security.
- **Offers unlimited scalability** – Users can easily expand any tier of storage at any time to respond to changing requirements or capacity growth—and the library's capacity-on-demand provides economical archive expansion.
- **Provides the security of expert partners** – Quantum and its solution partners are specialists in video and archiving. Quantum is a world leader in tape archive, and StorNext is the leading software for video applications around the globe.

CASE STUDY

storage tiers, including tape, to provide extremely high-archive capacity at a very low cost. StorNext's policies also can automatically create multiple copies of files to provide protection. And Quantum has a long established reputation in the media and entertainment sector as a trustworthy supplier for video solutions.

"Surveillance data is unusual," explains Dunn. "It is a critical asset—it must be kept under our direct control for decades in some cases, and it must be protected. But most of it will never be looked at again. So it does not make any sense at all to keep it on live disk. With StorNext, we don't have to. It lets us use our existing resource, our library, to store all that data at a cost that was far, far lower than any disk-only solution we saw."

AUTOMATING MANAGEMENT OF DATA ACROSS TIERS

In the new architecture, all the body-camera data is ingested directly into a StorNext-managed environment, landing on a Quantum high-performance disk. The data is retained there for 30 days, and in the background StorNext automatically creates two copies of the files on tape. One is held in the Scalar tape library as an active archive, directly available to any users needing to view the videos. The second copy is moved off-site for longer-term retention and disaster recovery protection.

The StorNext archive management system allows users to view any of the files directly through a single, file-system interface, whether the files are stored on disk or tape—no need for IT support.

"The only way we know whether data is being read from disk or tape is that it takes a little longer to access the data stored on tape—the interface and applications are identical," says Dunn.

Using tiered storage means that the department will be able to manage nearly a petabyte of data with only 240TB of live disk space.

"StorNext's ability to let us use a small amount of disk while the balance of the data is on tape was just what we needed to keep this project's costs under control," says Dunn. "It also gives us protection and long-term retention, something that was a real headache with disk-only systems."

The new system—which was half the cost of a disk-only approach—further optimizes the department's resources because the library also provides backup for its other records.

TAPE ARCHIVES FOR LONG-TERM SECURITY AND ACCESSIBILITY

The Quantum Scalar i6000 tape library has several key features that made it an easy choice to meet the

Calgary Police Service's need for long-term security and accessibility. It easily scales using a capacity-on-demand growth model that supports multiple petabytes of storage in a single frame, and it can be partitioned into multiple logical libraries to support different applications. The Scalar i6000 also offers dual robotics, providing redundancy and ensuring that performance stays high even during periods of heavy activity.

In addition, the library is optimized for high-security uses with military-grade AES 256-bit tape encryption and a FIPS-compliant key management solution, which provides security for the Calgary Police backup and archive data—even when it is off-site. Extended Data Life Management (EDLM) offers policy-based data integrity checks that proactively scan archived or vaulted tapes to ensure that data is readable when needed.

"EDLM automatically records error correction rates on the tapes, gives us reports on how the media is doing, and can even write the data to new cartridges before any information is in danger from bit decay," Dunn explains. "It's a neat feature that can give us essentially unlimited data life and a way to support those multi-decade retention periods."

FUTURE-PROOF FLEXIBILITY

The new system also gives the IT team another important feature: flexibility in the selection of other vendors.

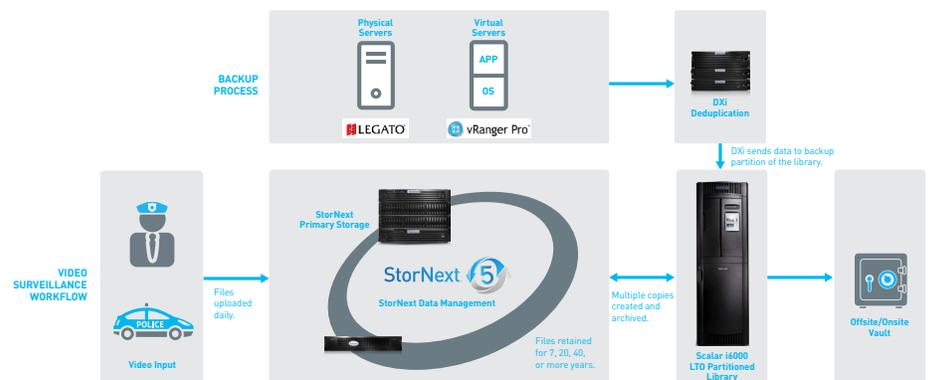
"We know that the recording technology will change and that we need to avoid being locked into one vendor," says Dunn. "Because it provides a file-system interface, StorNext will work with many different camera systems—that gives us a choice. In fact, during our pilot phase we ran two different camera systems as part of our evaluation, and we ran both of them in our StorNext environment. If it makes sense to change suppliers down the road, we know that StorNext will make it easy for us to do that."

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ABOUT THE CITY OF CALGARY POLICE SERVICE

The Calgary Police Service is located in Calgary, Alberta, Canada. In concert with other agencies and the citizens of Calgary, the Calgary Police Service strives to preserve the quality of life in the community by maintaining Calgary as a safe place to live, work, and visit.



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