

Pacifica Police Department Arrests Digital Video Storage Challenges with Scalable, Cost-Effective Network-Attached Storage from Dynamic Network Factory

The beautiful city of Pacifica, located 12 miles south of San Francisco on the Pacific coast, is known for its rolling hills, forested canyons and miles of spectacular surfing beaches. Incorporated in 1957, Pacifica is one of San Mateo County's youngest communities, but its Spanish origins make it perhaps the oldest: Pacifica lays claim as the location where the Don Gaspar de Portola party first sighted San Francisco Bay.

Challenges
<ul style="list-style-type: none"> Limited IT resources Growing needs to store digital video content Current storage solution was overtaxed Limited budget for IT capital expenses
Solution
DNF's FlexStor-NAS 4020
Benefits
<ul style="list-style-type: none"> Cost-effective price point Centralized digital video data Simple scalability for escalating growth requirements Lower resource requirements for system administrators

Today, with a population of nearly 40,000, this small, peaceful town maintains a first-class police department to uphold the city's outstanding quality of life. With 56 personnel including 39 sworn officers, the Pacifica Police Department is committed to serving its citizens with the highest standards of ethics, professionalism and respect.

The department has made a tradition of leveraging technology to enhance its ability to fight crime and handle the approximately

20,000 calls for service it receives annually. As early as 1997, laptop computers were installed in each police vehicle, allowing officers to make electronic reports from the field. The same year, the department became the first public safety agency in San Mateo County, and one of the first in California, to adopt in-car video cameras. These analog-based systems supported an ongoing mandate to record all officer interactions with citizens.

In 2006, the cameras were upgraded from analog, VCR-style systems to more advanced digital solutions supporting higher quality audio and video. The enhanced clarity of digital video gives the department clearer images that leave a permanent record and reduce the need for officers to testify in person. Another benefit is that the video helps with training, serving as an invaluable resource for officers learning how to deal with a variety of situations by observing their peers.

The Challenge

While the advent of the digital age presented many advantages to the Pacifica Police Department, including eliminating the need to maintain stacks and stacks of fragile video tapes, it also introduced new storage challenges. Kenneth Fong, the department IT specialist, estimates that the officers collectively amass as much as 15GB of video per day with their cameras – about 5TB per year. “We are required by law to maintain all data for one year, even though the vast amount of that data never makes it to court,” he said. “The small percentage of video that is used as evidence is ultimately moved to permanent storage, and depending on the case, each recording can range from a few minutes to multiple hours in length.”

According to Eric Ruchames, a retired sergeant and 29-year veteran of the Pacifica police force, it wasn't long before it became clear that managing and protecting the video

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recordings was of the utmost importance. "Everything our officers use has technology in it today. Even our Tasers™ and defibrillators have software," Ruchames said. "And every piece of technology has a storage component. The benefits of all of this whiz bang technology can come to a screeching halt if we don't plan properly for storage."

Chief Jim Saunders was instrumental in the department's transition to digital video in its squad cars. In 2005, he took a lead role in requesting outside bids for a completely new digital audio/video system for the fleet. He wanted a system that simplified the officers' jobs, making it easier for them to file and access reports, while also supporting regulations for data storage and management. The solution needed to integrate well with their existing mobile data system and network, and, at the same time, it was imperative that, as a publicly funded organization, it met their budgetary requirements.

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Kenneth Fong
IT specialist

During his search, Saunders came across Data911 Systems, a manufacturer and developer of computing solutions for public safety. Their expertise and understanding of Pacifica's needs ultimately prompted the department to award them the contract, and Data911 immediately went to work to provide a comprehensive, in-car digital video system for the department.

At this point, Pacifica was way ahead of the curve in terms of understanding the value of in-car digital video. Yet at the same time, it still had to overcome a few minor technology hurdles.

The Solution

In December 2006, the Data911 system was completed. Deployment across the fleet took place in stages as new cars were brought into the department. The Data911 cameras are mounted near the rear view mirror of each squad car, with their lenses facing forward to allow officers to record anything in front of them, from moving or stopped vehicles, to people that they may be talking with. Officers carry a wireless remote to activate their cameras while away from their vehicles.

A key component of the system is a Tropos node installed on the roof of the police station. The range of the Tropos node makes it easy for officers to upload video streams from their patrol cars to the department's mobile video server. All in-car video footage is automatically sent to the server when any vehicle is within range. Officers can go to any workstation to review their recordings and use them as a basis for filing reports as necessary. All video is easily and instantly searchable, by time and date, by vehicle, by officer and by bookmarks.

Initially, the system included an IBM server, which provided both processing and video storage capabilities. However, as deployment progressed across the fleet, the department used all 1.2TB of the available capacity, even with only a portion of the vehicles equipped with the new digital technology. Even worse, the server had reached its scalability limit. As it turned out, the amount of data that they needed to save for compliance with the California Government Code was much greater than they had anticipated. In addition, use of the cameras also exceeded expectations, based upon the city's police department mandate for officers to record all citizen interactions.

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As a result, data volumes increased exponentially, and for a short period of time, Fong found himself moving files temporarily to external hard drives, thus taking them off line. At that point, he asked Data911 to find a dedicated storage solution with substantially more capacity and scalability to meet their ongoing needs. They looked at a number of Dell systems, but found them to be out of their price range. Then, Data911 found a match for Pacifica with the FlexStor-NAS 4020, an 18TB network-attached storage (NAS) appliance from Dynamic Network Factory (DNF), a Hayward, Calif. provider of high-performance NAS, storage area networks (SANs), RAID and iSCSI systems.

According to George Grotz, director of mobile digital video operations for Data911, DNF proved to be an ideal partner for the storage component of the system. "We were extremely impressed with their ability to quickly build a storage solution to our specifications," he said. "We also liked their warranty and their price point. An added plus was their headquarters location in the San Francisco Bay Area -- just a short drive from Pacifica -- which would allow them to provide on site service quickly and easily."

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George Grotz
Director of Operations

DNF has developed NAS systems since 2002, and has long experience developing solutions to support digital video as well as CCTV and other video surveillance applications. Based on the Pacifica Police Department's requirements for video consolidation, high scalability, and IP network support, the DNF team recommended a cost-effective, integrated Windows-based NAS solution. With the Windows Storage Server platform, the FlexStor-NAS makes management and integration simple for administrators, and the operating system

supports a range of deployment options. The FlexStor-NAS also incorporates high-performance dual Intel Quad-Core Xeon processors to handle multiple incoming video streams, with a large cache -- up to 16GB -- to buffer all incoming requests. Its dual 10/100/1000 copper gigabit Ethernet connectivity also more than meets the demanding, high-volume video requirements of the Pacifica Police Department.

Most importantly, the FlexStor-NAS is highly expandable, with internal storage capacity available to 40TB. It also offers optional single or dual-channel Ultra320 SCSI controllers to allow connection to external RAID subsystems to increase storage capacity quickly and easily, or to support an external tape library for disaster recovery or off-site storage and archiving. Each NAS appliance can also be connected to a Fibre Channel or iSCSI storage area network to expand storage capacity to over 200TB.

There were other advantages to Windows Storage Server 2003 that also appealed to the department. For one, it offers an intuitive, browser-based management interface, which allows administrators to remotely manage the system from anywhere. Also, with Microsoft's Volume Shadow Copy Service, such tasks as zero-downtime snapshots, backups and storage management can all be completed while the system is online, allowing system administrators to multi-task -- another big plus for Fong, who is the only full-time IT support person in the entire department. Another benefit of Volume Shadow Copy technology is that it enables users to retrieve old copies of deleted files right from their Windows desktop.

The Benefits

Installation and set up of the FlexStor-NAS was a breeze. A DNF technician came out to Pacifica to manage the process, with a Data911 representative then creating a link to the in-car video system and the network.

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Although transparent to the officers, the NAS has made an immediate impact on the department's IT environment. "The FlexStor acts like a humongous hard drive, and it has exceeded our expectations as far as ease of operation and functionality," said Fong. "Most importantly, we feel much better knowing that we're not going to run out of storage."

Since installing the NAS, which currently maintains 15TB of data, the Pacifica Police Department hasn't had to remove any files. In fact, they are able to keep data on the NAS longer than required by law, which has made Fong rest easier, knowing that any piece of video that the department might need is available at a moment's notice.

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Kenneth Fong, IT specialist

With its immediate capacity challenges solved, Pacifica is now looking at alternatives for off-site, long-term data storage. "Even though our building was designed to 1-1/2 times the building code, we have to plan for the unexpected -- a flood or even a tsunami or earthquake -- all of which can happen in Pacifica," said Ruchames. "Our experience with adding the NAS has taught us that planning ahead for storage growth and change is now more important than ever before."

Technology Partner: Data911, a leader in computing solutions for public safety, based in Alameda, Calif. (www.data911.com)

About Dynamic Network Factory

Founded in 1989, Dynamic Network Factory (DNF) is a privately held company based in the Silicon Valley (Hayward, CA). As a leading provider of network-attached storage, RAID storage systems, and IP SAN systems, Dynamic Network Factory carries a variety of products to assist companies in meeting their mission-critical storage needs with cost-effective, high performance, and high capacity storage equipment. DNF started as US subsidiary of Japanese publicly-traded IT conglomerate CSK Electronics in 1989. In 1998 the company refined its strategy and began to focus the hardware group on storage solutions. Within a year, DNF's rapid growth resulted in its emergence as an independent, privately-held spinoff. Since its inception, DNF has designed custom solutions for organizations of all sizes, and built products for many major computer manufacturers. DNF has over 20,000 customers ranging from consumers, small-to-medium business, government agencies, universities, hospitals, financial institutions, and Fortune 500 companies. Customers include UC Berkeley, MIT, the Federal Aviation Administration, Lockheed Martin, Bank of America, Citibank, Wells Fargo, Fujitsu, Nordstrom's, Toshiba, PG&E, and Safeway Corporation. For more information, visit www.DNFsecurity.com.

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