

Here's Looking at You, Kid

Understanding video surveillance, storage and data recovery for multi-site applications

Following the July attacks in London and elevated security concerns on all U.S. domestic public transit systems, pressure is building to address the increasingly critical need to capture, distribute, store and recover real-time video surveillance data from multiple geographically dispersed locations.

Though no one will likely debate the speed with which Scotland Yard sifted through video footage to locate images of the probable perpetrators, one fact is clear: Traditional surveillance systems that are limited to analog CCTV cameras, manual security observation, and proprietary, costly VCR- and DVR-based solutions are simply not able to prevent security threats.

Like many other legacy video surveillance platforms, the video security system used by the London transit authority is limited to forensic analysis. As such, the response to security breaches will always take place after the event. Legacy systems that feature standalone video storage devices are just as vulnerable to attack as the people and property they are trying to safeguard.

In our world today, forensic analysis and local video storage are not enough. Organizations should add capabilities that allow for distribution and storage of video surveillance images to multiple locations so that security personnel can view video received from multiple remote locations, save and



index data redundantly, and do disaster recovery quickly and in real time.

MIGRATING TO DIGITAL VIDEO FEEDS

Many facilities have shifted from analog to digital cameras that produce images that can be fed over digital networks. When video is captured in the digital domain, there's a lot more you can do with it. You can distribute it to multiple places simultaneously so that the proper

solutions. A combined video surveillance, storage and data recovery system expedites the real-time recovery of digital streaming video and enables rapid disk-based recovery of archived video surveillance footage.

Fully integrated systems that combine off-the-shelf video surveillance and storage components with affordable, open commodity hardware to streamline deployment also offer attractive cost benefits. This approach enables integrators and security-conscious

commercial, government and military organizations to easily integrate their choice of technologies in designing complete surveillance systems that evolve and scale as new technologies are introduced.

A combined integrated surveillance and security solution accelerates access to data and enables users to consolidate multiple video feeds onto

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people can be watching. You also can involve other technologies to help analyze what is being seen, store it in a digital for-

one recording device while seamlessly scaling to provision new servers on the network, as well as manage thousands of cameras.

INTEGRATING LARGE DATA STORAGE REPOSITORIES

After digital video is captured and distributed across a network, it can be stored inexpensively for later review and analysis, said Anindya Mukherjee, senior manager, BakBone Software of San Diego.

“If you just want to store the video for a few weeks or so, you can save it on a server disk locally, or preferably on a consolidated storage repository using disk-to-disk. But if you want to analyze that video or store it for archival purposes, it’s better to store it in a network-based storage repository or on tape,” Mukherjee said. “For example, a retail outlet might want to retain video for 30 days or longer in case security personnel want to go back and review events or identify people who were in a store on a certain date at a certain time.”

To implement a full disaster recovery plan, you’ll need to store all video data off site in case the primary site goes down and on-site systems are damaged or destroyed.

“Off-site storage more safely maintains video data and evidence as part of a disaster recovery plan. Acceptable off-site storage solutions for video data include video server disks, network disk replication, tape or online backup. The key is to make sure that data is stored in an independent location separate from the primary location so that a disaster will not impact both locations,” Mukherjee said.

Online storage or virtual disk libraries allow you to keep data online and available for quick analysis and retrieval. Data can be replicated off site in a disk archive or on tape. Library policies can be set for how long data is kept and where it ultimately goes. Virtual disk libraries can be supported and maintained by an IT department, thus reducing the workloads and budgets needed by physical security departments.

Other benefits of integrating video surveillance and data recovery technologies include:

- The ability to conduct near-instantaneous data restores is a dramatic improvement over the lengthy time lags associated with sequen-

tial tape access and recovery. This ability to facilitate point-in-time access to video images can mean the difference between identifying whether a threat is real or not, and then in real time, containing or responding to that threat.

- This approach accelerates access to data and enables companies to consolidate multiple video feeds onto one recording device.
- It also enables the storage of video both locally and off site in a variety of formats and qualities, depending on the purpose and needs.

The capacity of the storage systems required for video data storage varies with the application. For example, a recently implemented 200-camera system uses about 45 Terabytes of storage. Once the constraints of using a single storage device are removed and video is stored in multiple vaults distributed across a network, the applications become much more useful and versatile.

The recent reduction in digital storage costs and the wide availability of analytic tools now enable you to save huge files for both real-time and forensic purposes. Even a month’s worth of video images can be scanned to locate specific events and analyze them for relevant information.

DIGITAL NETWORKS OFFER MORE VERSATILITY AND INTEGRATION POTENTIAL

Traditionally, video storage was done on a VCR or DVR. But today, with massive data storage available from many different sources, video data can be stored wherever you need to store it, both locally and remotely. You’re not limited by what a single system or storage device can contain. You can do local storage, for instance, at 20 fps of very high-quality video. You can do centralized storage at a location, such as an airport or government building, at 10 fps for a longer period of time.

Surveillance and storage industry experts agree that organizations have a lot of different choices on how to implement video data storage solutions. Instead of struggling with what to do about the limited capacity of a single device, you can determine what you really need to be able to protect all of your operations. When digital video is cap-

abled, distributed and stored across a data network, you no longer have the limitations found in traditional analog video surveillance.

Integrated video and storage systems are being used today to protect the military’s most valuable assets. Previously, these facilities were protected with traditional alarm systems and analog cameras monitored by military personnel and guards. Recently, however, integrated digital video surveillance technologies have been introduced that tie together solutions from different vendors into one cohesive security and surveillance system.

Government agencies are using these systems to protect civilian assets, as well. Other protected locations include highway systems and toll roads, airports, water ports, rail stations, and security-sensitive corporate facilities and high-rise buildings.

OVERALL BENEFITS OF INTEGRATED IP-BASED SOLUTIONS

The traditional approach to providing video for security and surveillance applications has been to employ standalone hardware that encodes, stores and displays images from analog cameras located relatively close to the device. Multiplexed VCRs and, more recently, DVRs available from many vendors have dominated this market.

Closed systems using analog video cameras and DVDs for archival purposes are not optimal solutions for video surveillance when decision-makers and emergency teams are not in the same place. Because they are self-contained units, they also are very vulnerable in the face of disaster.

The integrated IP-based video surveillance, storage and data recovery system is a new and far more effective architecture for these applications. By enabling the storage of redundant copies at multiple locations, this type of solution provides a safeguard that ensures accessibility to vital video footage no matter how severe or far-reaching a disaster becomes.

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