Block (SAN) versus File (NAS) Storage for Video Surveillance

Learn the differences so you can protect and optimize your video infrastructure

BACKGROUND

From on-body police cameras to 24/7 monitoring of major transportation hubs, video has become a strategic source of information, insights, and intelligence. New intelligent video surveillance cameras and analytical applications are capturing huge amounts of information, precipitating an increase in requirements for bandwidth, write speeds, and storage capacity. And as video resolution and retention requirements increase, the volume and size of media content are growing quickly.

THE CHALLENGE

Organizations now look to enterprise storage vendors to help them handle the rapid increase in data volumes. Two architectures dominate the storage space for video surveillance solutions: File (NAS) and Block (SAN). NAS systems store data as files and present those files in a file system. With SAN, multiple devices are connected by a dedicated network and data is accessed in data blocks.

Although file systems can be used to address video surveillance workloads, even modern scale-out file systems introduce vulnerabilities that make them a poor fit for security applications. Because the file system can be accessed directly via TCP/IP, scale-out file systems require additional layers of certifications and architectural features to prevent unauthorized access to information. These layers can add management overhead, decrease reliability, and drive up the total cost of ownership.

THE SOLUTION

Through dedicated storage and simple data management, block storage systems, such as NetApp® E-Series systems, deliver the scalability, performance, and availability that video surveillance workloads require.

SCALE SEAMLESSLY

Some scale-out file systems require multiple platforms and identical models to scale. Many also require you to purchase one controller for every storage box. These approaches can rapidly become costly and complex. As your video needs grow, you need the ability to quickly and flexibly capture high-definition video from every angle. That means having an architecture that can rapidly and seamlessly scale to support hundreds or thousands of cameras.

NetApp®

E-Series modular scalability offers maximum density, performance, and reliability in a single system. Capacity can be added nondisruptively in any increment, with or without additional controllers, so you can scale up or out as your needs demand.

SIMPLIFY MANAGEMENT

As your video surveillance data grows, you could find yourself managing terabytes or petabytes of video data. This can be especially daunting if you're a security office who is responsible for your own infrastructure. The good news is that video surveillance environments don't require complex architectures, features, or functions. In fact, unnecessary complexity only reduces reliability, slows performance, and increases costs.

Unlike scale-out file systems, E-Series systems can scale to hundreds of petabytes within the same platform. And with E-Series, you can manage 90+ storage arrays—more than 270PB—from a single pane of glass. Graphic displays enable you to monitor, fine tune, and optimize system performance. Easy manageability can help you grow capacity without adding overhead.

When Tufts University doubled its video security infrastructure, NetApp E-Series systems enabled the university's IT department to add 238TB of video data with no additional headcount. According to Tufts Storage Specialist Cope Frazier, "The storage has been the easiest part."

INCREASE SECURITY

Cybersecurity is a growing concern in video surveillance environments. Camera recording takes place behind the firewall, but the cameras themselves are external to the facilities, which means that unauthorized access can take place through the camera environment. Scale-out file systems can leave your data vulnerable to direct access through a TCP/IP network connection. With block I/O, like E-Series, the file system lives in the operating system, which provides an extra layer of data security.

In addition, the complexity of scale-out file storage allows potential catastrophic failure or unauthorized access that could compromise all cameras in the cluster. The E-Series building-block approach offers functional isolation, protecting against total unavailability of data. This compartmentalization is particularly valuable for video surveillance environments in which safety and security are paramount.

IMPROVE AVAILABILITY

Hard drives fail. What happens when they do? Scale-out file systems offer some level of redundancy by combining nodes, but the nodes themselves are not redundant. In a busy cluster, a node failure could take months to rebuild because communication takes places over the same network that delivers camera data.

FOUR KEY ADVANTAGES OF E-SERIES BLOCK STORAGE

- Modular scalability for capacity growth
- Lower risk and simplified management
- High-density, high-capacity storage at reasonable lifecycle costs
- Market-leading design with outstanding reliability and greater than five-9s availability

If your video surveillance system is business critical, there's no good time for downtime. Correctional facilities, for example, rely on video to keep eyes on inmates and officers. Failed surveillance can put staff and inmates in harm's way and lose valuable evidence needed to protect against legal liability.

E-Series storage systems offer high availability with built-in redundancy at the node level. In the event of a drive failure, dynamic disk pool technology enables 99.999% availability and no data loss. Management tasks can be performed while the storage remains online, with complete read and write data access, so you can make configuration changes, perform maintenance, or expand storage capacity without disrupting video recording.

LOWER CAPEX AND OPEX

Storage can account for a significant portion of the cost of a typical video surveillance environment. High-definition cameras and longer retention times create exponentially more data to be stored. In fact, some police departments have had to postpone body-worn camera programs due to the high cost of storage alone.

The complexity of scale-out file systems only exacerbates the problem by requiring multiple management layers, features, and functions. In addition to having typically higher acquisition costs than block storage, scale-out file systems have greater operational costs due to management complexity and licensing fees.

E-Series block storage typically has lower acquisition costs than alternative systems, as well as straightforward invoicing that includes the initial configuration and support, with no licensing overhead. Operational costs for maintenance, power, cooling, and space are even lower because of efficiencies in cabling and storage density.

ABOUT NETAPP E-SERIES

E-Series is a proven platform with a 20-year history of development and optimization. With more than one million systems shipped, NetApp E-Series technology is found in enterprise SAN application environments that support workloads of every size, from the smallest mixed-workload environment to the world's largest computing systems. NetApp E-Series storage systems use a modular architecture that offers a true pay-as-you-grow solution to address new big-video data storage requirements.

ABOUT NETAPP

NetApp is the data authority for hybrid cloud. We provide a full range of hybrid cloud data services that simplify management of applications and data across cloud and on-premises environments to accelerate digital transformation. Together with our partners, we empower global organizations to unleash the full potential of their data to expand customer touchpoints, foster greater innovation and optimize their operations. For more information, visit **www.netapp.com**. #DataDriven