White Paper

Video Surveillance Solutions from EMC and Brocade: Scalable and Future-proof

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Introduction

In this paper, we will examine the trends that are merging physical security and IT support, where IT is undertaking increasing responsibility for video surveillance. A video vortex is being created in this industry as the number and types of devices that generate video surveillance data such as aerial drones, body-mounted cameras, satellites, and evidence-gathering cameras continue to proliferate. By understanding the challenges unique to enterprises and the need to integrate video surveillance into the existing IT infrastructure, we can determine the appropriate architectures required to meet present and future needs. Understanding these challenges will help prepare for IT's changing needs in the future.

Background

Video surveillance is increasingly performed using digital technologies and the growth of the video surveillance market has been estimated by industry research sources to be in the range of about 12% per annum. Thus an increasing amount of technical and business considerations from the IT sector is influencing those who are responsible for facilities management and physical security, and increases the need for these groups to collaborate. Conversely, IT groups need to understand the implications of holding increased responsibility for video surveillance infrastructure.

IP surveillance infrastructure is being chosen for its flexibility in camera deployment, which can be located anywhere; its ability to integrate into existing corporate IP networks; and its capacity to offer simplicity, flexibility, openness, cost-effectiveness, and opportunities for new services.

An ESG research survey of 302 organizations operating in North America indicated that 71% of the respondent organizations stated that IT provides video surveillance process and technical support.[1]

Challenges for Video Surveillance Implementations

Enterprise requirements for video surveillance are complex and varied. Distributed surveillance systems record videos covering local zones and store the videos locally, close to the cameras. Although enterprises deploy cameras in a multitude of distributed locations, they may need to deploy a central repository for video archival and in order to conduct centralized video content analysis. The organizational structure of enterprise IT requires that disparate teams such as networking, apps, and server management need to coordinate their efforts to support video surveillance and analysis. Large enterprises also need to address regulatory compliance requirements and business optimization issues, such as identifying operational inefficiencies and process improvements.

In the same survey cited earlier, ESG also asked the respondents what they consider to be the organization's greatest challenges with current video surveillance implementations, and many were associated with IT infrastructure with direct implications for storage and network infrastructure. For example, 30% of the respondents stated that search and retrieval of video surveillance footage was a challenge, 29% cited the high cost of onsite service, and 29% cited the impact on network bandwidth. In addition, difficulty in managing growing volumes of video surveillance data was cited by 26% of the respondents (see Figure 1).

This indicates that the primary challenges do not exist in the core task of storing the video surveillance data but in the applications (search and retrieval) and operation and maintenance of the infrastructure. A system that supports video management applications and offers flexible management will be critical to addressing these challenges.

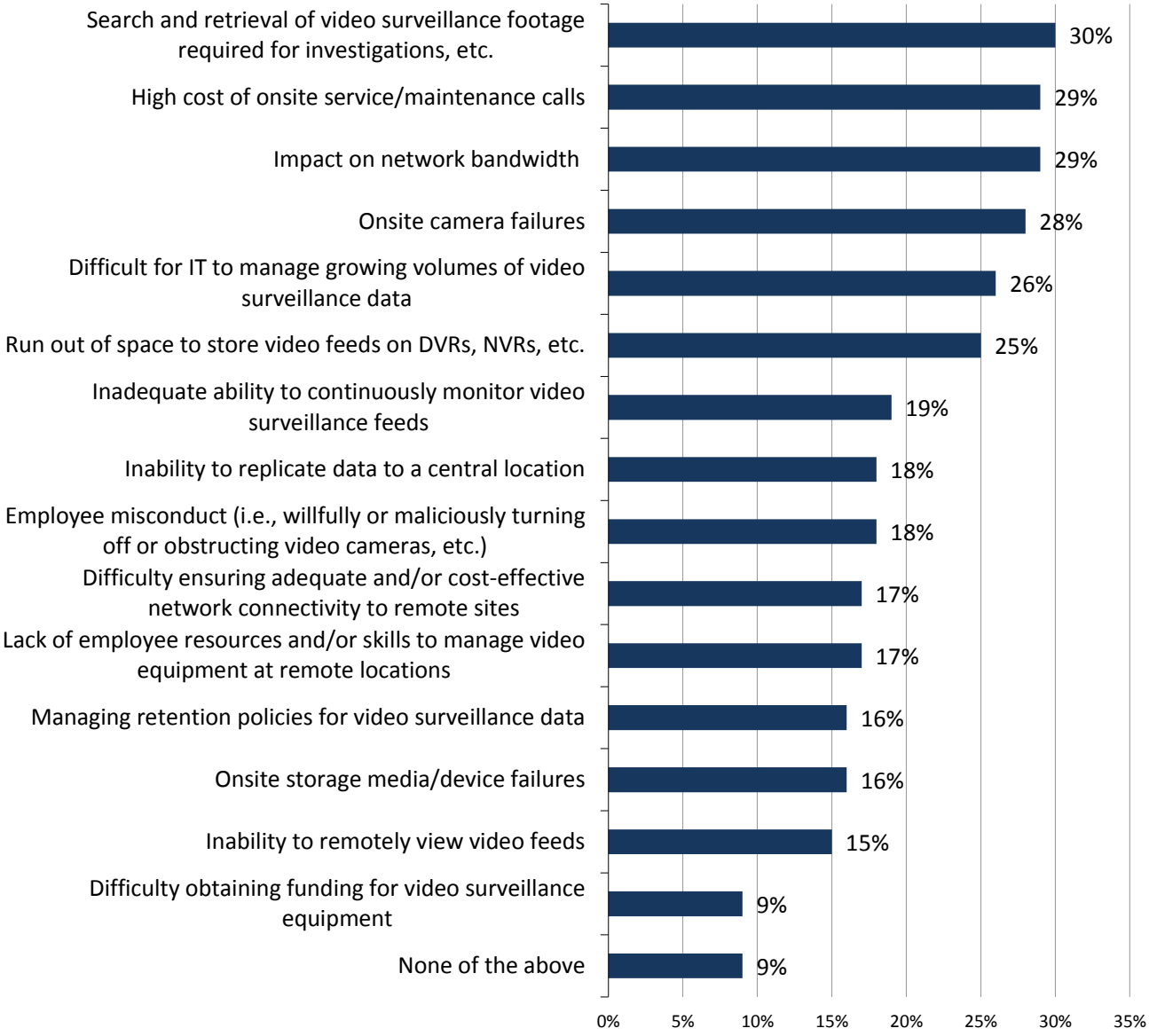
Larger enterprises need to address growth in video data arising from a growth in the number of cameras, lengthening retention periods, and other factors that affect storage capacity requirements. The implication is that a future-proofed architecture is needed since the growth can outpace the capacity and performance of the video surveillance infrastructure.

[1] Source: ESG Research Brief, *Video Surveillance: Now on IT's Watch*, December 2013.

These factors imply that enterprises cannot meet their surveillance needs by deploying simple digital video surveillance appliances, since they cannot scale in performance, capacity, and manageability. Instead, enterprises will need systems that integrate with existing IT infrastructure, support video content analytics, are capable of scaling out, and are flexible enough to meet future requirements. Issues such as network scalability, performance, and camera power requirements become important as the number of cameras and covered zones increase. Therefore, video storage capacity and the supporting networks need to scale together. Distributed environments require low cost, simplicity, and reliability. Centralized systems require massive scale, big data analytics readiness, and advanced protection capabilities.

Figure 1. Greatest Challenges for Video Surveillance Implementations

At a high level, what would you say are your organization's greatest challenges with your current video surveillance implementations? (Percent of respondents, N=150, multiple responses accepted)



Source: Enterprise Strategy Group, 2015.

In addition to technical requirements, there are regulatory and compliance requirements for security to be considered. They range from retention policies through prohibited monitoring of some activities to policy

enforcement. These factors must be considered in the IT infrastructure design, since they may impose a need to maintain a central repository for storing recorded video in distributed locations.

Modern IT Compatibility Requirements

Modern IT-based video surveillance infrastructure requirements are driven primarily from IT rather than from the surveillance and security organizations. Therefore, one cannot treat video surveillance as a simple tenant of existing IT infrastructure that *rides atop* the existing network infrastructure or storage systems. Coordination, interoperability, and integration needs to occur across a wide range of IT disciplines, such as application support or integration with server virtualization platforms. Of course, basic infrastructure connectivity such as connection types, or protocols such as iSCSI or Ethernet speeds are also relevant, as well as enabling convergence for the surveillance infrastructure.

The scale required to support metropolitan surveillance or large corporate campuses necessitates an inherently distributed nature for these kinds of deployments. Emerging areas with similar distributed needs include retail, major sporting venues, hospitals, schools, casinos, prisons, and organizations that might use surveillance data for marketing purposes. These lead to IT considerations such as the needs to scale the network based on the number of locations, increase performance as more high-definition video is captured, and even supply appropriate power to cameras while minimizing the need to rewire the facilities.

An enterprise IP surveillance system needs to be designed to perform well while minimizing data loss, lowering costs, offering data protection, and delivering openness for interoperability and compatibility with different systems.

Therefore, one needs to choose a future-proof system that can grow as both distributed and centralized surveillance needs grow, and that is flexible enough to meet future growth in data volumes, network capability, and other capacity requirements.

Desired Enterprise-ready Architecture

Given these challenges for addressing rapidly changing modern requirements for the enterprise, what type of solutions provide an open and flexible architecture that is future-proof?

An integrated video surveillance IT infrastructure from EMC and Brocade is capable of addressing these needs. It combines central and distributed systems for storage and video processing, all connected by a modern network. EMC Isilon Video Surveillance Solution's scale-out NAS design is well suited for centralized storage due to its capacity to grow with lengthening video retention needs and to add data capacity. It is supplemented by EMC's VNX-VSS, a purpose-built surveillance storage system for distributed locations, which is well suited for local storage and optimized for popular server virtualization, simplifying the deployment of video surveillance software within virtual machines. Both systems are validated with most of the commonly used video management software applications (VMS).

Brocade's network switches complement the storage, as they also scale out with a range of a capacities and conform to open standards. In particular, they support Power over Ethernet standards, which powers the IP-based cameras and avoids the need to wire separate power and networking cables, reducing facilities expenditures. Their ability to present a unified view for network management, even when a set of mixed network switches are deployed, enables scalability while simplifying operational procedures.

In addition to the vendors, customers might also want to consider engaging a VAR to find the appropriate solutions, since multiple components need to be considered in addition to the storage and networks, such as camera configuration and video management software selection, as well as network and device security.

The Bigger Truth

As enterprise IT organizations take on responsibility for video surveillance, they must be prepared to collaborate with facilities management and physical security groups on the specific video surveillance requirements appropriate for enterprises today and tomorrow, as those requirements evolve and as video surveillance data volumes continue to grow. Enterprise-wide requirements differ from small scale and isolated departmental needs, which have previously relied on simple surveillance appliances.

The IT infrastructure for surveillance must not only meet video recording requirements, but also needs to be open and flexible. Surveillance data must be treated like IT applications, with planning, implementation, virtualization, network, and protection considerations. The systems need to be tested, validated, and integrated with video management software and cameras in order to provide a complete solution.

Video surveillance infrastructure must integrate with the existing IT infrastructure, scale as requirements grow, and adapt to use cases that mix centralized and distributed deployments for video collection, storage, and analysis. An enterprise-based approach differs from an appliance-based approach, which has limited scale, integrations, and openness and is inflexible.

The networking infrastructure should complement the video infrastructure by being scalable to meet the growing capacity requirements and open enough to be compatible with cameras and storage devices. If necessary, networks need to be upgraded to meet the additional demands of modern IP-based video surveillance. IT infrastructure is only as strong as its weakest link and an inadequately designed network can prevent a successful deployment of IP video surveillance.

By keeping all of these requirements in mind, and looking for systems that provide the required IT building blocks, organizations can be assured that their video surveillance infrastructure will suit their current needs and be future-proof and flexible enough to meet their growing needs.

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