



Technical Advances and Regulatory Changes Drive Demand for Robust Video Surveillance Systems



Dell Fluid File Video Solution provides superior digital performance, scalability, manageability, flexibility, and robust storage functionality at a reasonable price.

A paradigm shift is taking place in the video surveillance marketplace. Tried-and-true solutions that have worked for years can no longer keep up with what the modern enterprise needs. Spurred by rapidly evolving open technology and changing legal regulations, customers are searching for new solutions that support robust visual displays and increasing data volumes. In short? Out with the old, in with the new.

Traditional video surveillance systems were built largely on decades-old analog foundations, making them cumbersome to deploy and maintain. Many use proprietary interfaces, in effect tethering customers to one vendor while limiting choices, increasing expenses, and hampering deployment flexibility.

In addition, the traditional video surveillance system cannot meet today's system demands.

Modern businesses need a solution that can sift through petabytes (PB) of video data in a few seconds while also quickly and easily scaling from a small deployment to a large installation. Expanding a traditional video surveillance system often required replacing underlying hardware, a scenario that no longer works. Today's companies want the ability to expand system capacity and storage volumes at competitive prices.

Hence the rise of new agile and fluid digital video surveillance systems built on Internet Protocols (IP). IP-based solutions allow easy mixing and matching of components, and a growing number of third-party partners can add value to baseline solutions. These new solutions also extend the video surveillance buyer profile. While security and facilities management professionals continue to play

a key role in purchasing decisions, the IT department, CIO, and/or CSO are increasingly involved in system selection and deployment. In sum, a revolution is taking place in what customers demand from their video surveillance systems—and their vendors.

Video Surveillance's Expanding Reach

Surveillance systems have been well established in select markets, such as college campuses, event venues, and retail stores. With increasing sophistication and new business and security challenges, many organizations are extending the reach of their video endpoints. Sample applications include:

- **Schools** use video surveillance systems to monitor who comes in and out of the building during the day in order to make schools safer.
- **Event venue operators** can track who enters/exits a facility or be better positioned to respond to emergencies.
- **Retailers** employ video surveillance systems to track customer traffic patterns and/or monitor employee interactions with co-workers and customers.
- **Corporate facilities** and property managers use video surveillance systems to track authorized visitors, including guests, delivery services, or outside maintenance firms.
- **Airports** are key users of video surveillance solutions for monitoring the comings and goings of millions of customers and employees each day.
- **Many cities and governments** around the world are looking at Safe City initiatives that often include a video surveillance element.

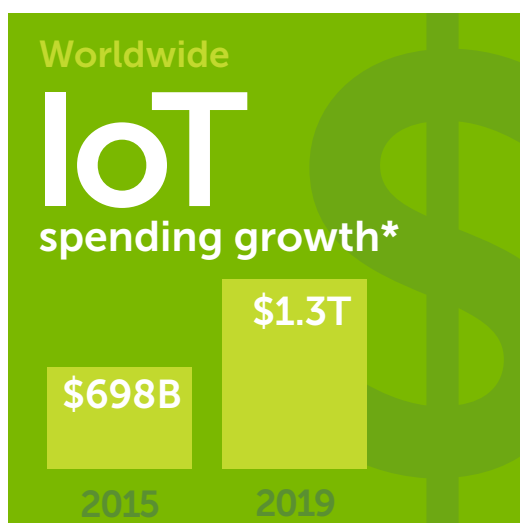
New markets and applications continue to emerge, especially as the Internet of Things (IoT) extends system intelligence to additional network endpoints. Businesses

can now use video surveillance to automate previously manual tasks, such as checking usage meter status.

Governance regulations are also driving demand. Federal, state, and local laws require that certain businesses and government agencies record what happens on their premises. What's more, existing laws are becoming more stringent in terms of archive requirements. In the past, video footage might have been stored for a few months, but many of today's laws require organizations to archive files for several months—and even years in certain cases.

In addition to collecting video footage for surveillance use, organizations are building applications that leverage the technology to glean business insights. Retail stores, for example, are using video systems to evaluate the effectiveness of merchandising displays based on customer store traffic and purchasing decisions. That information can be used to improve or change displays (and potentially increase sales).

The end result: The number of video surveillance endpoints is expanding, the variety of users is increasing, new applications are emerging, and the system storage requirements



*Projected. SOURCE: IDC Worldwide Semiannual Internet of Things Spending Guide, Dec. 2015

are growing. For IT decision makers, CSOs, facilities managers, and company security teams alike, the purchasing process is complex—and growing only more complicated.

Traditional Solutions No Longer Make the Grade

In addition to changes in video surveillance usage, the technology underpinning these systems is outdated—and often inflexible. Previously, most video surveillance systems were non-networked analog solutions consisting of CCTV cameras connected primarily via coaxial cables, typically used at the department level and not tied into the enterprise network. Although Ethernet switches have been used for years in other enterprise networking applications, they were rarely used for video security applications.

The resolution found in traditional systems can't hold a candle to today's PC monitors, let alone high-definition (HD) video cameras. Analog camera resolution is typically measured in Television Lines (TVL). A 400 TVL rating signifies 200 distinct dark vertical lines and 200 distinct white vertical lines over a horizontal span equal to the height of the picture. Typically, this resolution is not even as good as today's cell phones.

Change has become constant in business. Firms install a few cameras, and the numbers quickly swell. Traditional systems do not easily scale in the number of devices or the volume of storage they can support. As a consequence, customers often have to buy new systems and cobble them together rather than extend an existing solution.

As the number of endpoints has increased, data management has become increasingly complex. Market research firm International Data Corporation [expects](#) worldwide IoT spending to grow from \$698.6 billion in 2015 to nearly \$1.3 trillion in 2019. The additional

endpoints created by IoT equate to additional data generation points, creating dramatic increases in the volume of video footage.

This expanding footage volume, in turn, creates challenges with system design and deployment. Currently, firms in a variety of industries still leverage older storage solutions, such as DVDs and DVRs. Collecting, transmitting, and storing video data in that manner can strain existing systems. In addition, many system management functions are labor-intensive, so employees struggle to find time to do their work.

As new regulations extend retention periods, video data volume also expands. In some cases, employees need to collect, transmit, or search through years of footage. Consequently, working with individual DVDs is no longer feasible.

One View into Multiple Video Sources

Today's enterprises want one view into their video footage, and one console for management. This requires consolidating system interfaces. However, traditional surveillance tools were often designed in vacuums, using proprietary interfaces, making them difficult to configure. As a result, the management tools for these stand-alone systems don't easily tie into the other solutions for centralized management. In many cases, customers have to build the links themselves, which adds to the expense.

In addition, traditional video surveillance systems often don't mesh with the existing IT network infrastructure—let alone the growing variety of end-user devices, including smartphones, tablets, or body-worn cameras. Traditional systems are typically based on older, less-robust, and less-dependable network protocols, and they cannot interact with IP networks and IP cameras, digital recorders, and storage solutions.

IP-based digital video surveillance systems fit easily into the concept of integrated systems design, using a common network infrastructure and simplified system architecture. Businesses have the option of using wired or wireless connections to move video images from camera endpoints to central servers for analysis. An IP networking approach meshes with existing IT systems, enabling companies to leverage existing data center infrastructure and management tools. This common foundation, in turn, streamlines building design and increases operations efficiency.

A Growing Need for Video Analytics

Analytics are becoming the new business currency. As such, organizations want to do more than collect video footage; they want to leverage that asset to gain new business insights. This means employing new data analytic solutions designed to glean business intelligence from surveillance data. How customers interact with product displays and store layouts, for example, can empower managers to better optimize their business models and achieve superior results.

Analytics will also contribute to the growing data storage requirements over the next few years. But storing and protecting video surveillance data is not enough. Any storage solution must provide access to the data with the performance required, ensuring business intelligence systems deliver insights in a timely fashion. This demand creates budgeting challenges, since better performance is often associated with higher costs. Simply put, older storage solutions often cannot provide the necessary performance to keep up with the demand for timely and relevant analytics.

IT decisions makers and their security counterparts need to find new solutions without wreaking havoc with their budgets. Today, the removal of traditional geographic and distribution barriers—which allows companies to reach more customers, in more locations, and in new ways—has also opened the door to a variety of business risks. Constellation Research [found](#) that since 2000, 52% of Fortune 500 companies “have either gone bankrupt, been acquired, ceased to exist, or dropped out of the Fortune 500.” With companies large and small struggling to survive, managers find themselves trying to squeeze every last dime out of their budgets, driving the need for cost-effective video surveillance solutions.

Improving Image Resolution and Screen Refresh

To keep up with modern security and surveillance requirements, a system must deliver high performance and scalability, manage data simply and easily, be flexible enough to mesh with other solutions, and deliver all of this at a cost-effective price point. Digital, modular, IP-based systems are the clear answer.

Start with image clarity. What was considered a high-quality image a decade ago

The removal of traditional geographic and distribution barriers has also opened the door to a variety of business risks.



pales in comparison to what is available today. The Dell Fluid File Video Solution, which features the FS8600 Network Attached Storage solution and SC storage arrays, supports powerful IP cameras with leading-edge imaging technology.

Image resolution depends on two factors: how much information is on the screen (pixels per square inch), and how often the image is refreshed (frames per second). With digital systems, the more pixels on a screen, the higher the resolution.

Years ago, digital images started with about 100 pixels per inch (PPI). In the past several years, the industry moved to HD video, which offers higher resolution and quality than standard-definition images, topping out at about 500 PPI. Recently, there has been movement to Ultra HD video, which increases the number to thousands of pixels per inch.

Frames per second (FPS) measures the number of times that a screen refreshes. With digital communications, the typical range is 12 to 15 FPS. HD transmissions have pushed the number up to approximately 30 FPS, and Ultra HD moves the bar to 60 FPS.

The improvement in video quality has a major impact on storage requirements. Higher-quality video requires more storage. The greater the number of FPS, and the more images captured for future analysis, also increase storage volume requirements. The Dell system is robust: It provides more than a PB of raw storage in a single file system, more than 1 billion files in a single NAS volume, and files up to 16 TB each.

Scalable, Third-Party Compatible, and Cost-Effective

Corporations need flexibility. They want to start with a few cameras and extend their network as needed. The Dell system is

cost-effective for small deployments and scales up to accommodate thousands of individual cameras.

As companies extend their networks to more locations, they need a video system that's easily scalable. Dell offers a unique value proposition: It scales capacity and performance independently from one another. Users can increase storage capacity to handle growing data volumes and/or add more controller processing power to boost performance and throughput. As a result, when the number of physical cameras increases, the underlying infrastructure keeps up.

The system includes strong storage system functionality. Automatic load balancing ensures the video system remains online if an infrastructure problem arises. The system offers a range of replication options that help balance availability and potential expenses, and build robust, cost-effective networks. The product's single name space provides simpler management of the data paths, enabling storage techs to easily locate information housed in multiple storage systems.

Dell's use of the IP protocol expands an organization's deployment options. Most video surveillance solutions use a dedicated network for the camera and recording infrastructure, but may link up to the corporate network for viewing capabilities. The Dell product offers integration with popular data center infrastructure, such as iSCSI and 10G Ethernet, meaning special skill sets are not needed for management.

Third-party support is key to building a successful video surveillance ecosystem. The Dell Fluid File Video Solution's modular design allows customers to connect it to components from leading video surveillance add-on specialists.

One such specialist, Milestone Systems, is a recognized provider of IP video management software (VMS). The firm's

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Why Dell?

- **Worldwide presence and expertise**
- **#1 supplier of total storage (internal and external)**
- **#1 iSCSI storage and external DAS vendor**
- **#1 flash provider choice by storage professionals**
- **Intelligent storage platforms with advanced virtualization capabilities**
- **Modular portfolio of customer-centric services**
- **Open, pragmatic, and proven solutions**
- **Complete, end-to-end solution development, delivery, and support**

Milestone XProtect VMS is used in more than 100,000 installations worldwide and works with a variety of cameras, access control solutions, and video analytics.

Dell's product is also compatible with VMS systems from Genetec Inc., which serves transportation applications in more than 80 countries. The firm's VMS system offers a Unified Threat Level Management feature that instantly changes security system configurations, such as camera-recording quality, in response to changing security conditions based on predefined settings.

With any video surveillance system, cost is always an important consideration.

The Dell Fluid File Video Solution provides 4 PB of raw capacity for as low as \$0.17/GB*. The company also offers leading-edge system density: 1 PB of raw capacity in 14U (depending on configuration). This density enables deployment in small floor spaces, in turn lowering real estate and energy costs.

The Right Digital Video Solution

The current design complexities of today's video surveillance systems underscore the importance of selecting a partner with expertise and experience in delivering superior surveillance solutions. Additionally, while the camera technology and placement are critical to success, the underlying storage infrastructure has a significant impact on the total cost of ownership (TCO) and potential return on investment (ROI).

Dell, leveraging technology from Intel, delivers a broad range of solutions, including server, storage, and networking solutions designed for simple or complex video surveillance installations. The Dell Fluid File Video Solution is designed for today's business requirements, offering top-notch performance, high-end scalability, superior manageability, and the flexibility that organizations require to support their video surveillance needs both now and in the future.

Learn more at Dell.com/FS8600.

*Based on internal Dell pricing and discount analysis, February 2016. Individual customer's price may vary on a variety of circumstances.