

# Federal Video Surveillance Market and Intelligent Data Storage

## Insights and Benefits of the EMC Isilon Solution

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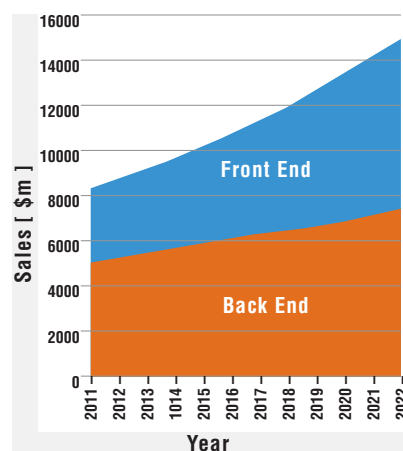
### ESSENTIALS

- **Ease of use:** Fast, flexible, and simple to install, manage, and scale at virtually any size
- **Massive scalability:** Unimaginable room for video surveillance data storage—from 18 TBs to over 52 PBs of capacity per cluster
- **Unmatched efficiency:** Typically delivers 85% or greater storage utilization efficiency to drive down storage costs and reduce the data center footprint, with nearly 3PB available in a single rack using the new HD-400 nodes
- **Robust cybersecurity capabilities:** Roles-based administration (RBAC); Authentication zones; SEC 17a-4 compliant WORM data security using Isilon SmartLock®, providing protection to prevent accidental, premature, or malicious alteration or deletion of video surveillance data
- **World's fastest NAS:** World-record performance of 3.75 million, SPECsfs2008 IOPS, and 210 GB/Sec throughput

A recent EMC-sponsored MeriTalk survey<sup>1</sup>, involving over 150 federal agency video surveillance experts and leaders, reports that **99%** of federal agencies believe video surveillance technology will improve their agency's operations and ability to prevent crime, theft, and terrorism over the next five years. The survey also reveals that **79%** believe their agency needs to improve collaboration between IT managers and physical security managers in order to improve video surveillance programs, where they have estimated that **54%** of video surveillance data remains unanalyzed. However, the MeriTalk report also highlights the areas where the integration of Big Data analytics and video could have the greatest impact, including:

- Providing real-time access, *instant event searching*, and active archiving
- Capturing images of vehicles with high enough resolution to use *facial recognition*
- Connecting and collaborating with other agencies for *real-time surveillance* and satellite pulse transmissions
- Accelerating post-incident analysis to increase the probability of capturing *criminals*

In federal operations involving the protection of people, vital infrastructure, and mission critical information from accidental or malicious activities that pose threats, video surveillance systems are increasingly used to address such threats. Since surveillance is such an important component of addressing threats and reducing risks, this market is expected to grow to \$26 billion by 2018, according to market research from IHS Technology<sup>2</sup>. That is twice the growth rate of the overall global information technology (IT) market. While surveillance is widely used across both the commercial and government market segments, one might ask, "Who watches more video than the U.S. Federal Government?" Therefore, isn't the federal space one of the best for the application of innovative technology solutions?



Source: Visiongain 2012

In addition to this total surveillance market growth forecast, Visiongain<sup>3</sup> market research estimates the military video surveillance market alone, which must handle huge amounts of big data typically from High-Definition (HD) Full Motion Video (FMV), is likely to experience more investment to support their back-end storage, dissemination, and analysis systems (versus front-end sensor systems). It is expected to grow from about \$3.3 billion in 2011 to \$7.5 billion by 2022, approximately equalizing these market segments as shown in the figure on the left:

<sup>1</sup> MeriTalk Video Vortex Survey and Report March 2015, <http://www.meritalk.com/video/vortex>

<sup>2</sup> IHS Technology Video Surveillance Market Research, <http://news.thomasnet.com/companystory/emc-has-an-eye-to-simplify-video-surveillance-and-security-20033994>

<sup>3</sup> Visiongain Military Surveillance Market Research, <https://www.visiongain.com/Report/801/The-Military-Video-Surveillance-Systems-Market-2012-2022-Full-Motion-Video-for-ISR>

# REDEFINE

SOLUTION OVERVIEW

EMC<sup>2</sup>

## Video Surveillance System Back-End Storage Market Growing

The rapidly evolving needs and operational requirements of the federal user have accelerated technology adoption and organizational integration into the digital age. The complexities associated with massive volumes of digital information data, the ever increasing resolution of video camera and sensor data, the operational demands for instant availability and analysis, as well as the compliance challenges of longer retention periods, are driving video surveillance systems to leverage the power and potential of super-efficient, intelligent data storage solutions such as the EMC Isilon data lake.

The Isilon Scale-Out Network Attached Storage (NAS) capability, originally invented specifically to provide high-performance, efficient data storage for video streaming, provides simple, efficient, highly scalable storage for the core of any organization's video surveillance environment. The Isilon data lake compliments, and can be used in conjunction with, the EMC VNX-VSS100 storage system for the edge in highly distributed surveillance environments. Both the Isilon and VNX solutions have been thoroughly lab tested with leading video surveillance partners, including Axis, Genetec, Milestone, Verint, and many others to ensure interoperability compliance certification.

Federal government video surveillance data is collected from a wide variety of means and agencies, as noted by the March 2015 MeriTalk Video Vortex survey, and as shown in the figure below:

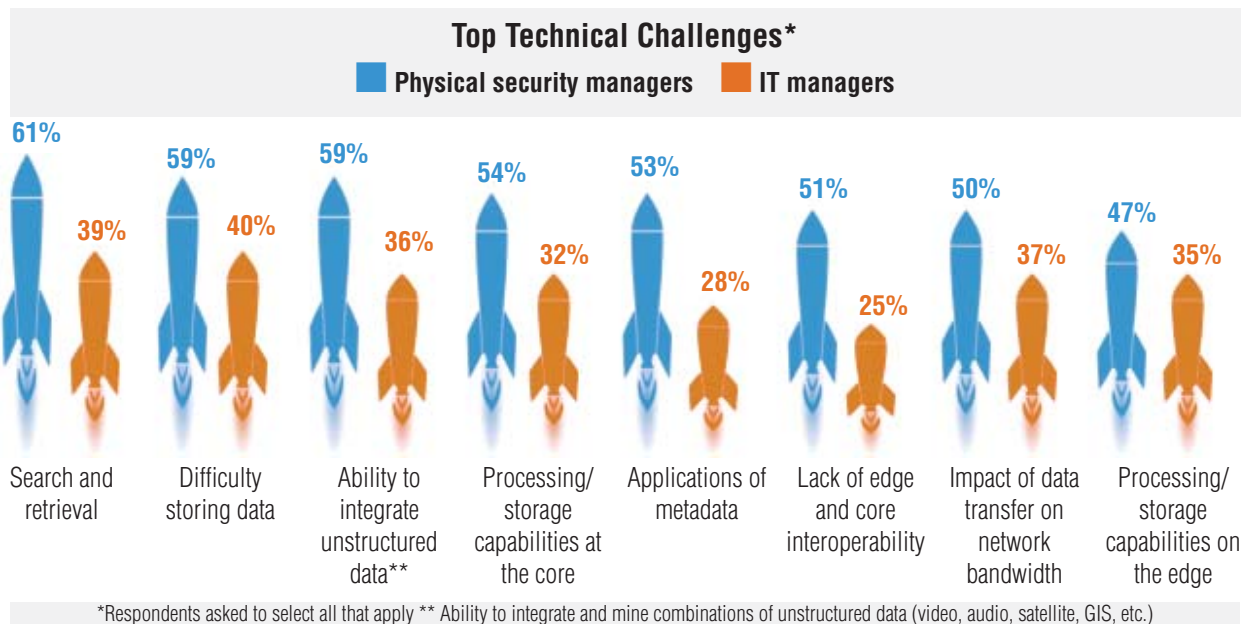


**On average, 76% of Federal surveillance cameras are IP; 24% are analog**

As the figure also depicts, today's federal video surveillance solutions are characterized by a combination of centralized (core) and distributed (edge) technology and systems. Overall, 74% of the federal agencies have implemented an enterprise approach, which includes these core and edge video surveillance technologies. These core solutions contain the majority of video storage capacity, typically petabytes, and also provide for the archiving and big data analytics typically associated with data center operations. The edge represents the tactical and distributed operational environments, and consists of local, lighter-weight video management and storage solutions, typically terabytes. A key insight from the MeriTalk report was that this can represent a complex solar system of capabilities, and it highlights the necessity for leaders to anticipate and deal with this type of "information in orbit", which leverages cameras at fixed locations, but increasingly integrates mobile "orbiting" solutions.

This is where things can really begin to stress traditional video surveillance systems, and where highly automated, intelligent data storage solutions like EMC Isilon become relevant. The MeriTalk survey surfaced a vital statistic - 92% of federal leaders and agencies currently researching, planning, or implementing video surveillance solutions are seeking to make Machine-to-Machine (M2M) technology a part of their strategy. M2M enables both wired and wireless (mobile) devices, including video surveillance cameras, to collect, share, and distribute data over a distributed network. Because of its inherent automation and software-defined storage operating system, intelligent data storage is a vital component of any video surveillance system seeking greater efficiency or operational flexibility for next-generation capabilities. It affords any agency such flexibility, as it "flexes" to optimize storage capacity, backup times, and performance. It also offers an economically viable solution that is 40%-50% CAPEX and OPEX more efficient than competitive data storage solutions, according to IDC and Gartner Group customer studies.

The prospect of a federal market which is rapidly expanding, coupled with intelligent data storage, originally envisioned and invented to address the thriving commercial streaming video market, presents a world of new opportunities. It can also help inform the federal customer of the availability of such innovative solutions and the win-win prospects associated with proactively addressing these exponentially-growing operational needs. However, technical challenges, such as those identified in the following graphic from the March 2015 MeriTalk video survey, highlight difficulties and opportunities in addressing this market, such as communication and perspective differences between the physical security managers and IT managers:



"Billions of dollars per year are spent by agencies such as the Information Awareness Office, NSA, and FBI to develop, purchase, implement, and operate systems such as Carnivore, NarusInsight, and ECHELON to intercept and analyze all of this data, and extract only the information which is useful to law enforcement and intelligence agencies. The Department of Homeland Security awards billions of dollars per year in Homeland Security grants for local, state, and federal agencies to install modern video surveillance equipment. For example, in 2013, the city of Chicago, Illinois, used a \$5.1 million Homeland Security grant in a program known as Operation Virtual Shield to install an additional 250 surveillance cameras, and connect them to a centralized monitoring center and with its preexisting network of over 2000 cameras. Speaking in 2009, Chicago Mayor Richard Daley announced that Chicago would have a surveillance camera on every street corner by the year 2016," according to Wikipedia.

Rapid application of innovative technology to address a federal operational requirement is always the end objective. However, sometimes operating environment uncertainties or acquisition challenges preclude immediate action. In such cases, a creative optional path may be to build a relationship that enables the development of trust and demonstration of relevant mission capabilities with a federal customer. In such cases, the use of a Cooperative Research and Development Agreement (CRADA) may be the best way forward. An example of how a CRADA can lead to a Federal government decision to procure the demonstrated equipment is The Global Information Network Architecture (GINA). GINA is a collection of systems that draws in information from many stove-piped sources, regardless of their coding or programming. Initially developed via a CRADA with the Monterey Naval Postgraduate School (NPS) and Xslent LLC Technologies, the work subsequently transferred to a CRADA between Big Kahuna Technologies LLC and the U.S. Army Corps of Engineers Engineering Research and Development Center.

The NPS now works with GINA through a version licensed to the U.S. government or through a standing contract with Big Kahuna for the DOD Information Assurance (IA) Certification and Accreditation Process. The technology is also being used by the California National Guard for border security efforts and to support missions including tracking of transnational criminal organizations. Scott McKenzie, NPS manager for the Program for Information Exchange, Distributed Information Systems Experimentation Research Group, noted that the Guard developed its priority list of objectives, and industry system developers helped formalize the requirements. McKenzie stated that for border security, GINA addresses challenges including camera and ground-sensor management, personnel alerts, etc. In addition to the California National Guard's use of GINA for its border security missions, DHS researchers are exploring information modeling for the Federal Customs and Border Protection (CBP) missions. They are examining what information may enable missions and are removing barriers, especially in the machine-to-machine (M2M) realm, such as improving license plate reading technology (a "Big Data storage and Analytics" challenge), to check more data and generate broader federal, state, and local reporting. McKenzie further noted that a synergy exists between the NPS CRADA developments and with the CBP. "We can see where many of these solutions can be transferred directly for use," he says. This is exactly the type of Federal research and development solution transition that EMC seeks to support, leverage, and expand upon to further demonstrate the utility of intelligent data storage and its inherent cyber security features.

Overall, many of these video surveillance challenges lead to data storage opportunities that can be summarized as follows, with the associated EMC Isilon resolution:

**Cost efficiencies, containment, and management continue to be pain points**

- Isilon storage is highly efficient and saves 40%-50% CAPEX and OPEX, per IDC and Gartner Group reports
- Isilon intelligent data storage can be added to a cluster within 60 seconds and eliminate future migration needs
- An Isilon cluster automates all data configuration, balancing, tiering, and cluster management processes
- Dedicated SAN for storage is no longer an issue and DAS is no longer required for Hadoop Big Data analytics, as Isilon is next-gen multi-protocol capable today, and can do analytics-in-place

**Regulatory compliance is driving the need for core enterprise video storage and leading to dramatic market growth**

- Each Isilon cluster can serve multiple applications with scale-out approach across the enterprise and offers capabilities to address the data protection, security, and compliance matters
- Isilon natively - no translations required - supports a next-generation multi-access data lake environment simultaneously (NFS/CIFS/SMB/HTTP/FTP/HDFS/REST/S3)
- The SmartLock® feature keeps data immutable, protecting from accidental or malicious alteration

**Data Retention policies and surveillance camera resolutions are continuing to increase exponentially**

- Isilon provides surveillance management systems a single repository to scale-out to 50+ petabytes and beyond, in a single file system, through multiple secure clusters and access zones
- Isilon is not a RAID-based storage system. Isilon eliminates the need for traditional storage Volume and Logical Unit Number (LUN) alignment and wasted space from RAID approaches
- EMC Isilon delivers up to 85% or higher disk utilization capacity and performance utilization across the cluster
- Isilon offers an efficient, automated balancing and tiered expansion storage capability for the vast DVR/NVR applications and systems already on the market

So how do we best translate these wide-ranging EMC Isilon benefits for the surveillance market and address the communication differences between the physical security and IT departments, aside from other key stakeholders in the federal agency or organization? It certainly helps to understand the target operational environment. Many organization's physical security departments typically do not have the resources (skilled people and budget) found in IT Departments. Further, traditional storage expansion requires skilled storage administrators with the capability to carve up Logical Unit Numbers (LUNS) to accommodate additional storage requests. Perhaps start by noting that it is easier to administer, scale, and manage, and is a proven solution based upon IT "Best Practices" with a guaranteed integration path, leading to substantial cost savings.

Recognizing the fact that EMC offers both centralized and distributed architectures to address the video surveillance market needs is another good step forward. The centralized architecture scales to thousands of cameras and petabytes of capacity, and is ideal for outsourced hosting architecture. It is also VMware certified and tested. The distributed architecture likewise scales to hundreds of cameras and petabytes of capacity and is also VMware certified and tested. This solution is also ideal for hosted evidence management and compliance.

Since many of the surveillance market opportunities will be explored with partners, it is important to be aware of the video surveillance alliance landscape. Isilon has long been engaged with the following ISVs: Genetec, Surveillance, DVTel, Milestone, and Verint, where certification levels vary by vendor and by data storage tier. In addition, EMC Isilon is committed to expanding the number and productivity of these surveillance market alliances, and welcomes any referrals of qualified partners.

In summary, the latest MeriTalk survey of more than 150 federal video surveillance experts and leaders from across the U.S. Federal Agencies found that 99% believe that video surveillance will improve operations. However, 91% of agencies surveyed say they need more data storage, 89% of respondents need more computing power, and 84% indicate a need for increased personnel. From an IT infrastructure perspective, EMC Isilon has demonstrated video surveillance market relevance along with documented and independently validated Capital Expense (CAPEX) reductions of over 40% and infrastructure Operations and Maintenance (O&M) and Operational Expense (OPEX) reductions of 48%, according to an IDC study. For the video surveillance market, Isilon not only addresses the massive growth and scalability challenge, but also tackles the personnel requirements head-on, virtually eliminating the need for special resources found in IT Departments. Where traditional storage expansion requires skilled storage administrators with the capability to manage logical directories, volumes, and LUNS to accommodate changing storage needs and requests, Isilon automation and intelligent data storage make it easy to administer, scale, and manage video surveillance storage needs. Coupled with the flexibility of Isilon options for centralized or distributed architectures, and the distinctive cyber security features of this intelligent data storage capability, makes EMC Isilon an ideal choice for the rapidly expanding video surveillance market.

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