

DDN | Whitepaper

Any Surveillance Anywhere Anytime

DDN Storage Powers Next Generation Video
Surveillance Infrastructure

ddn.com

I N F O R M A T I O N I N M O T I O N [™]

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Introduction

Over the past decade, the world has seen tremendous growth in the use of video surveillance systems, as it is now a critical element in the overall strategy of today's security planning professionals. The ability to capture, monitor and access visual, or other sensor information quickly and reliably can make all the difference in preventing crime, minimizing liability and insuring the security of personnel and assets from possible threat. Traditional storage solutions were never intended for today's higher resolution cameras, or the ability to combine high capacity for longer retention with integrated data assurance measures to insure information is always available. And, as security professionals integrate a new generation of video analytics solutions into their architecture, storage solutions must be able to deliver higher performance to accelerate warnings or eliminate false positives.

This increased adoption is leading video surveillance and its associated technologies to mature rapidly. Analog cameras are being replaced with digital technology, intelligent analytics is being done on video streams in real time, and advancement in networking technology is enabling new surveillance business models for service providers who specialize in cloud-based solutions. More sophisticated cameras are taking videos and images with finer resolution, creating massive amounts of data that need to be stored and managed accordingly. Having the right video surveillance solution and storage can result in increased levels of threat detection and security, as well as provide increasing levels of business intelligence to remain competitive in today's world.

This paper provides an overview of the video surveillance challenges of today and tomorrow, and explains why traditional video surveillance storage solutions are unable to solve those challenges. It then discusses how DataDirect Networks (DDN) solutions are designed from the ground up to power the next generation surveillance infrastructure to handle any video surveillance stream, anywhere, anytime.

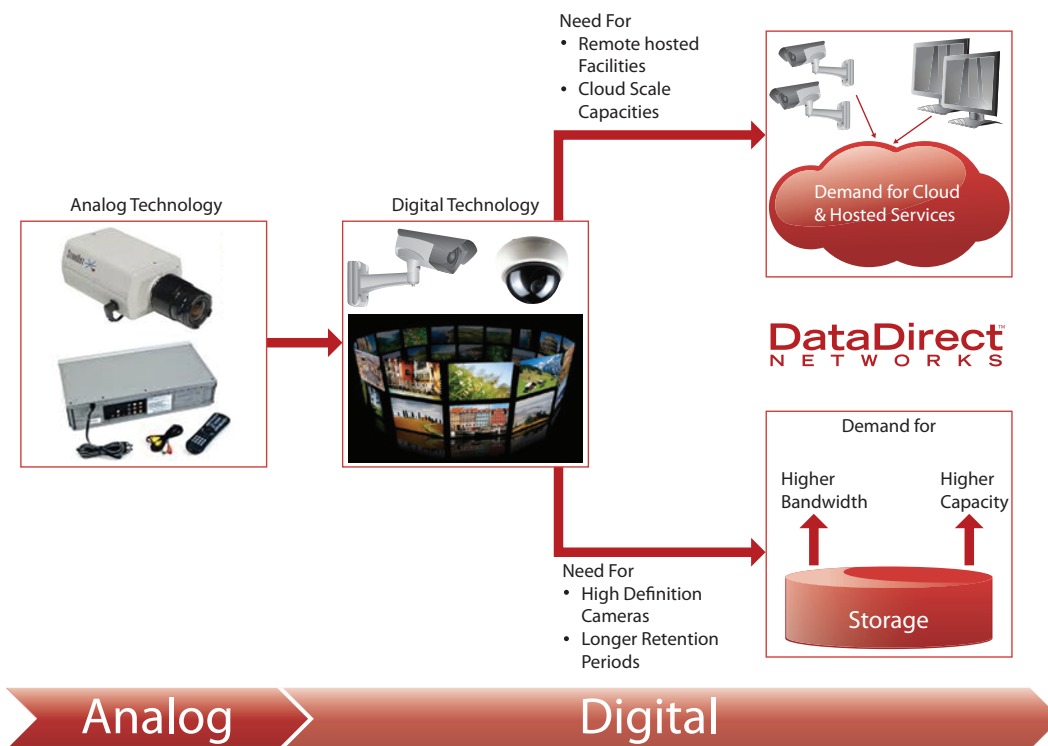
Evolution of Video Surveillance

Over the past three decades, the demands of the market have resulted in video surveillance and its associated technologies to evolve rapidly.

Traditional surveillance systems that are comprised of analog cameras, time-lapse VCRs and monitors are being replaced by fully digital systems with higher requirements for reliability and image quality. IMS Research forecasts that by 2015, more than 70% of all network camera shipments will be megapixel resolution as resolutions and retention periods are increasing for compliance purposes and advanced analytics are being done on video streams to provide real-time monitoring of an organization's environment, people, and assets with minimal human intervention. In addition, new business models that offer Video Surveillance as a Service, in order to generate new streams of revenue, are creating demands for a cloud and hosted solution.

The portfolio of products from DDN, perfectly compliment this video surveillance evolution. DDN enables its customers to build sophisticated video surveillance solutions to gain real-time insight, reduce potential threats, minimize TCO, increase business intelligence and generate new streams of revenue in the cloud.

DDN – Enabling the Video Surveillance Evolution



DDN Handles Any Video Surveillance Stream, Anywhere, Anytime

Our high density, highly efficient storage solutions are optimized for video or other sensor ingest, management, and collaboration. That's why we have been selected by more than 600 of the world's leading video production and media companies to help manage their video content. We've leveraged this experience to develop the next generation of solutions to help physical security experts build more efficient and reliable camera-based surveillance deployments. Before we discuss this product portfolio, let's first understand the challenges that customers face today.

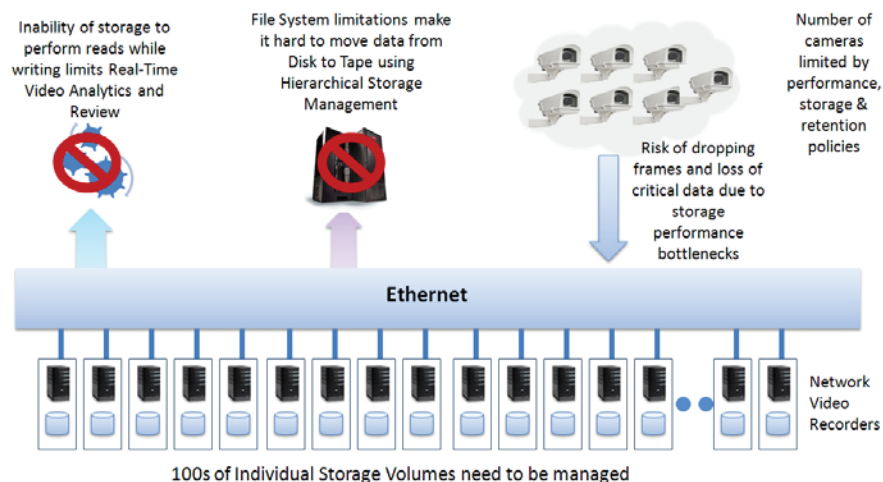
Challenges

Video surveillance relies heavily on the crucial element of having a scalable, high performing storage system behind an intelligent video surveillance platform. This storage should be able to:

- Support the concurrent ingest of video streams from hundreds to thousands of IP cameras.
- Deliver the utmost quality of service to record higher frame rates and video resolutions.
- Support the ability for analytic software to perform concurrent reads of IP camera video.
- Provide the flexibility to scale cost effectively to larger storage capacities and higher retention periods in the future.

Traditional storage solutions have been unable to satisfactorily fulfill these requirements.

Challenges with Traditional Video Surveillance Deployments

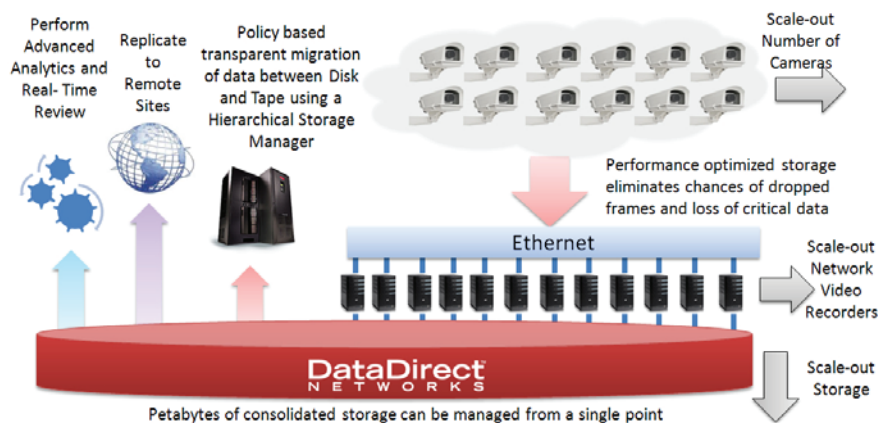


The DDN Difference

DDN specializes in the design and delivery of systems for the most demanding, content intensive video surveillance deployments. These solutions provide the performance and the scalability to handle video streams from thousands of cameras, while providing the quality of service to ensure that there is no loss of critical surveillance data. Customers get the flexibility to start small and scale to Petabytes (1000TB) of storage and thousands of cameras, with no disruption in service.

- **Density** - DDN's ultra-dense storage appliances utilize enclosures that house either 60 or 84 drives in a single 4U tray. Support your entire network and retain data longer with less equipment, and lower requirements for power, cooling and space. Deliver the highest quality of service to record higher frame rates and video resolutions.
- **Smart Scalability** – DDN makes future expansion planning easier. Start with as few as 10 drives and add only what you need to cost efficiently meet your requirements. With the DDN building block in place, organizations will be able to increase storage capacity at any future time by simply adding more drives to the existing Active/Active RAID Controllers, expanding up to multi-Petabyte environments.
- **Ease of Management** – Take back your nights and weekends. Fewer storage appliances and components mean fewer management headaches. DDN's OS firmware has email and SNMP capability and can be programmed to "phone home". The interface is also scriptable which enables the creation of powerful tools for consolidated monitoring and fault detection. With DDN, managing 4.8PB of data is just as easy as managing 300TB

DataDirect Networks Future Proofs Your Video Surveillance Infrastructure



Why DDN for IP Surveillance

Security experts select DDN when they cannot afford to take any chances with their video surveillance data. Unlike simple data files, an IP video stream is sent only once. If the storage array did not capture it, the evidence is lost and there are no second chances. DDN's expertise is in improving digital media content management and analysis. From the ground up, DDN solutions are engineered to receive the entire video stream, without compromise.

Optimized for Physical Security Data

The DDN system provides the Video Surveillance market innovative technologies to improve performance and reliability. Designed and optimized specifically for mixed workloads, DDN delivers unrivaled throughput and self-healing capabilities that insure data integrity. Your security team will be assured that all information is captured without evidence loss, and that they have access to it whenever they need.

DirectProtect[™] Real-Time Error Detection & Correction

With DirectProtect, data is checked on-the-fly, in real-time on every read. Not only will bad data be detected, it will be modified in-flight, so that the host receives only the correct data. Additionally, the data can be checked on the media and repaired if necessary, all without a performance hit or a delay in access and completely transparent to the user.

DirectProtect also helps stabilize large pools of SATA drives by attempting multiple levels of drive recovery before failing a drive. When most SATA RAID systems see a problem on a drive, they immediately fail it and begin rebuilds. This causes the entire SATA RAID array to lessen performance while the rebuild operation is happening, and with the large capacities and lower reliability of SATA drives, these rebuilds can take extensive periods of time to complete and occur frequently. DirectProtect doesn't immediately fail a drive when it detects an anomaly. Rather, it will try to re-read the drive, repair the defect, or reset the drive to recover it without a full failure. While this is occurring, there is no performance hit, and in most cases, the drive can be successfully revived, eliminating the need for rebuilds.

Partial Drive Rebuild Capability

The DDN Platform can intelligently and accurately rebuild only the bad sectors on SATA disks to return the system to full health as fast as possible. Partial drive rebuild capability is especially important as users deploy larger TB-sized disk drives which have very long, full-drive rebuild times. Moreover, the tremendous backend bandwidth of all DDN appliances, coupled with our hardware-accelerated parity calculation engine, ensures that no single drive rebuild will impact system performance. Security experts can be assured they will capture all the evidence produced, and have access to it whenever they need.

ReACT[™] Intelligent Cache Management

DDN's Real-Time Adaptive Cache Technology (ReACT) is an intelligent cache management solution that optimizes writes in real-time, delivering balanced throughput and IOPS performance. ReACT writes sequential data directly to disk media while small, random IO utilizes extremely fast cache. This solution avoids parity overhead during video ingest and provides more cache headroom to achieve full stripe, optimizing application performance.

Redundancy

DDN has no equal when it comes to fault tolerance of its solutions. All DDN components are fully redundant and failover has been incorporated into every aspect (2 power supplies, 2 fans, 2 RAID Controllers etc.). Organizations who cannot tolerate fault select DDN.

Partner focused, DDN is aligned with the world's leading video surveillance application vendors and system integrators to provide optimized solutions. Our partners include –



...and many more

The DDN Platforms

DDN's portfolio of products includes Storage Area Network (SAN), Network Attached Storage (NAS) and hybrid solutions, as well as embedded and object based solutions to provide customers with the exact solution that fits their needs. The following section discusses these solutions in more detail.

Storage Systems

Innovative, award winning and proven in the world's largest video production environments, the following storage systems provide block based data access for VMware® as well as to Windows®, Linux® and Solaris® environments.

SFA7700™

The SFA7700 is a scalable, cost-effective, hybrid storage appliance, purpose-built for the ingest and management of mission critical data such as video surveillance evidence. Customers can start small and scale to multi Petabyte environments, enabling the storage of surveillance streams from hundreds or thousands of IP cameras and satisfy any retention length. A streaming optimized architecture supports hundreds to thousands of high resolution cameras, concurrently streaming at different rates - while high speed storage performance and low latency enables simultaneous ingest and review of surveillance data.



SFA12K™

The SFA12K product family is purpose-built to resolve the largest data management challenges in the world. The 12K enables you to architect and scale your environment more intelligently, efficiently and cost effectively than ever before, regardless of the number of sites you are monitoring, camera resolution or data retention requirements. Fusing unprecedented IOPS and bandwidth performance with highly efficient capacity management, this is the storage foundation for the next generation of data intensive physical security challenges. Each enclosure houses 60 or 84 drives in just 4U to hold just over 5PB in a single rack, delivering the industry's densest storage platform lowering requirements for space and power.



Web Object Scaler® (WOS)

WOS is a turnkey object storage appliance that allows customers to deploy a private "cloud" infrastructure. It addresses both the most demanding scalability requirements - billions of files and petabytes of content in a single namespace - and improves file sharing and content distribution to your users. WOS is true object storage, from the API to the disk head, with no underlying file system to degrade performance and efficiency - giving WOS a sustained foundational advantage over all other object storage systems. Because of the inherent efficiency in the WOS system, it lowers total cost of ownership to a fraction of traditional storage systems.



Any Surveillance

DDN storage systems enable today's organizations to capture, store and analyze massive numbers of high-resolution video streams in order to gain real-time insight, business intelligence and protect their employees, citizens and assets from potential threats. With DDN storage systems, organizations are guaranteed the scale, performance and reliability required to capture and analyze content at the highest resolutions while providing the most flexibility with the lowest operational cost and complexity.

Anywhere

DDN's comprehensive portfolio is designed to be deployed anywhere, meeting the diverse needs of organizations building camera based surveillance infrastructure. These include file and block based solutions for centralized or distributed sites, embedded solutions for simplicity and data center efficiency and object based hosted solutions to enable new business models and generate incremental revenue streams.

Anytime

Organizations that deploy sophisticated video surveillance infrastructure expect the highest levels of availability, reliability and durability.

DDN | About Us

DataDirect Networks (DDN) is the world leader in massively scalable storage.

Our data storage and processing solutions and professional services enable content-rich and high growth IT environments to achieve the highest levels of systems scalability, efficiency and simplicity. DDN enables enterprises to extract value and deliver business results from their information. Our customers include the world's leading online content and social networking providers, high performance cloud and grid computing, life sciences, media production, and security and intelligence organizations. Deployed in thousands of mission critical environments worldwide, DDN's solutions have been designed, engineered and proven in the world's most scalable data centers to ensure competitive business advantage for today's information powered enterprise.

For more information, go to www.ddn.com or call 1-800-837-2298.

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