Developing a Future-Proof Video Surveillance Storage Solution

Seagate delivers centralized, secure, and scalable storage for Milestone's XProtect® VMS solution.

Solution Summary

Milestone XProtect® video management software (VMS) brings the video surveillance puzzle pieces together to create a solution that keeps people and property safe. When combined with a platform like Seagate® Exos® X 5U84, XProtect® becomes a unified security platform—an intelligent, scalable, and centralized data storage system capable of enduring performance and long-term data protection.

Benefits Summary

- Enables scalable centralized storage for video recording

- Delivers highest protection for video data with Advanced Distributed Autonomic Protection Technology (ADAPT)

- Provide enterprise class security with Seagate data-at-rest self-encrypting drives (SED)

- Offers optimal total cost of ownership (TCO) for your storage footprint with lowest rack space, power, and cooling—allowing your VMS deployment to scale to meet growing storage needs

The demand for storage is always growing. With higher resolution 4K cameras and more devices connected to video surveillance systems, deployment requires scalable, secure, and high-performance storage.

If the data storage deployment environment is centralized by decentralized infrastructure and latency-sensitive requirements, users should consider a centralized shared storage solution such as a Storage Area Network (SAN) or cloud-based service.

Choosing the right VMS is essential to an organization's successful surveillance deployment. A central hub for connected devices, the VMS controls things like internet protocol (IP) cameras and sensors. While most video cameras are designed to support video recording and reviewing capabilities, they do not provide shared access across the organization's wider surveillance network. The VMS collects video data from connected devices, stores that data in a central repository, and serves as an interface for viewing video in real-time or accessing recorded streams.

To complicate matters, surveillance environments are becoming increasingly complex. In the past, data captured from IP cameras was pure video streaming. But now, with the adoption of video analytics, artificial intelligence (AI), and other automated solutions, these video streams come with a host of additional information. This means any VMS deployment must be supported by a robust centralized storage system that can optimize the high volume of data being continuously captured and stored in surveillance environments.

The Challenge

Data is proliferating at an unprecedented rate but optimizing the value of that data remains a challenge. In surveillance environments, high-demand VMS applications can easily generate terabytes of data—the result of increased IP camera resolutions, extended retention requirements, and a growing number of connected Internet of Things (IoT) devices. Exacerbating this challenge is an urgent need for scalable storage environments with robust security features that keep TCO low. Traditionally, the prohibitive costs associated with data storage have deterred businesses from integrating innovative technologies like AI, machine learning (ML), and advanced analytics into their surveillance systems.

Solution Approach

When combined with SAN storage like Exos X 5U84, Milestone's XProtect® VMS solution becomes intelligent data storage that is capable of scalability, enduring performance, and reliable data protection for years to come.

The Seagate Solution

Seagate, the leading expert in data storage, builds tightly integrated solutions that offer big capacity with a small footprint, fast access with ease of management, and cost-effective protection for future technology refreshes.

The Seagate Exos X storage platform is the only vertically integrated solution in the world. With a thoughtful design from end to end, Exos X serves as the foundation upon which innovation can grow—thereby eliminating hiccups in the future. This means you can spend less time worrying about issues and more time leveraging the latest innovations in drive technology to your advantage.

Exos X enables you to:

- Easily grow your storage with up to 128 drives in a single storage volume

- Choose between different RAID configurations to enhance performance or increase fault tolerance in the case of drive failure

- Rebuild your storage volume up to 95% faster than traditional RAID

- Work with mixed-type drives such as SSDs and HDDs

ADAPT Rebuild Time and Performance under Failure

Metric	Traditional RAID 8+2	24 Drive ADAPT	84 Drive ADAPT	120 Drive ADAPT
Rebuild 1 drive	55.5 hours	24 hours	7 hours	5.3 hours
Fault Tolerance: after 2nd drive failure	55.5 hours	9 hours	1 hour	25 minutes
Perf impact*, 1 drive down	-41%	-23%	-8%	-6%
Perf impact*, 2 drives down	-62%	-37%	-14%	-10%

10TB drives

Rebuild times assume rebuild 1/0 (RW) at 50MB/s per drive

Read performance impact under failure assumes no rebuild I/O

Rebuild time may vary based on system workload at the time of rebuilding

Partner Solution

Milestone XProtect® VMS brings all the puzzle pieces for video surveillance together in a perfect combination to create a solution that keeps people and property safe. Reliable, customizable, user friendly, and secure, XProtect® simplifies management of video surveillance, situational awareness, access control, and information analytics operations. The Milestone XProtect® VMS comes in several variants, each designed to match different segments and needs. When combined with Seagate Exos X systems, XProtect® becomes scalable and intelligent for years to come.

Total Solution

- With the number of connected devices in deployed surveillance environments growing, more storage is required. Easily scale up to petabytes of storage when you need it at lower cost.

- High-definition cameras require more bandwidth. Support multi-vendor IP cameras and a wide range of frame rates for video recording devices.

- The need for storage is growing. With Exos X high-capacity storage, you'll have longer retention periods for both video and static images without losing data.

- Fragmented systems increase administrative workload and don't allow for easy scalability. Centralizing VMS management to store the recorded videos from a distributed implementation allows for data protection and the ability to grow.

Features & Benefits

Streaming Optimized

- Delivers high bandwidth to support more video recording devices and higher frame rates without compromising video recording quality.

ADAPT

- Rapid rebuild technology that rebuilds storage volumes up to 95% faster compared to traditional solutions. In addition, ADAPT provides graphical-user-interface-driven management for system compossibility, storage provisioning, and performance affinity to allow the customer to select desired Seagate storage features.

First to market

- Provides the highest capacity for ever-increasing surveillance storage demand and longer retention periods for both video and static images without losing data.

Encryption

- Seagate Secure™ encrypted hard drives keep your data safe—even if your drives are lost, stolen, or misplaced.

Solution Components/Joint Architecture

# of Recorders	Video Resolution	# of Cameras	Motion Dectection	# of Playbacks	CPU Utilization %	Aggragated MB/s	Disk IOs	Network Load
Dell EMC PowerEdge RS640	1920 X 1080 Stripes-8Mbit	400	None	No	47-72	420.6	1753	4.4Gb/s
Dell EMC PowerEsge RS640	1920 X 1080 Stripes-8Mbit	400	None	No	47-72	447.3	1761	4.4Gb/s

Storage Testing with Milestone

Configuration:

The Milestone XProtect® Product: XProtect Corporate 2020 R2

• CPU Intel® Xeon® Silver 4216 @2.10GHz

VMS server platform:

• Dell EMC PowerEdge R640
• Windows Server 2019 Standard

Results:

• Support 2 x 400 (800 cameras total) with 8Mbps, resulting in the consumption of only 15.76% of the storage system's throughput

• Seagate storage with 5.5GB/s sequential write throughput would support 3000 HD 8Mbps cameras with 70% of controller utilization

• Configuration is using 14TB under ADAPT erasure coding to deliver >90% faster rebuild compared to RAID 6
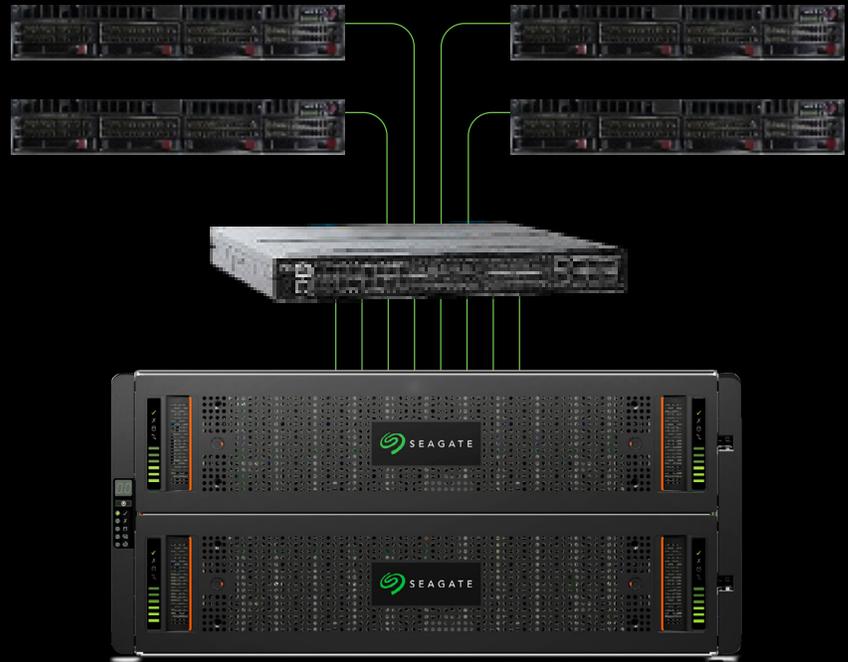
Conclusion

From commercial applications like building 500 cameras to large enterprise deployments like smart cities and airports (>1000 cameras), Seagate and Milestone have the right solution to satisfy your video surveillance needs. We know these applications require scalable, secure, storage with high data protection and low TCO. As an integrated storage provider, Seagate solutions are an ideal match for your Milestone XProtect® VMS deployment.

About Milestone Systems

Milestone Systems is a leading provider of open platform video management software—technology that helps the world see how to ensure safety, protect assets, and increase business efficiency.

Milestone enables an open platform community that drives collaboration and innovation in the development and use of network video technology, with reliable and scalable solutions that are proven in more than 500,000 installations worldwide. Founded in 1998, Milestone is a standalone company in the Canon Group.

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