

# High Density Centralized Storage for Enterprise Video

**Create a high density, centralized enterprise IP video surveillance storage solution with Seagate and Network Optix.**

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## Challenge Summary

High density, high-availability storage is needed for any surveillance-deployed environment. With AI-powered applications generating metadata alongside captured video, and large-scale IP video deployments becoming the norm, more systems require scalable, secure, reliable, high-performance, and high-density centralized storage solutions. As systems continue to scale, users should consider storage area network (SAN) or cloud-based service solutions to meet these requirements.

## Solution Summary

Combined with Seagate Exos X 5U84, **Nx Witness video management software (VMS)** is a lightweight, easy-to-use VMS designed to discover, view, record, and manage IP video cameras and their related metadata. With it, operators can monitor, analyze, and react to critical events in real time.

## Benefits Summary

- Enables reliable, scalable, secured storage for high-definition video recording—add up to 1000 4k cameras on one 5U84 with zero dropped frames
- Delivers the highest protection for video data with Seagate's Advanced Distributed Autonomic Protection Technology (ADAPT)
- Provides enterprise-class security with Seagate data-at-rest self-encrypting drives (SED)
- Offers the choice of high density for optimal TCO with lowest rack space, power, and cooling—delivering huge capacity with a small footprint and allowing your VMS deployment to scale to meet growing storage needs
- Delivers fast and reliable access with easy management

Choosing the right storage solution for a video management system (VMS) is as important as choosing the VMS itself. Storage sits at the heart of any surveillance system—it's responsible for archiving information captured by edge devices (cameras, IoT) and integrations with 3rd party systems (e.g., LPR, face recognition, traffic management, access control, etc.), and for retrieving that information to present to operators on demand as they execute searches to complete incident investigations. In short, a storage solution can make or break an IP video surveillance solution.

To complicate matters, surveillance environments are becoming increasingly complex. In the past, data captured from IP cameras focused purely on streaming and capturing videos. Today, advanced AI-driven analytics generate events and real-time system health monitoring, send notifications, and deliver associated data to multiple on-the-go sources with low-latency. These are standard requirements.

## The Challenge

Video-driven data is proliferating at an unprecedented rate, but optimizing the value of captured data remains a challenge. In surveillance environments, high-demand VMS applications can easily generate petabytes of data—the result of increased IP camera resolutions and frame rates, extended retention requirements, and a growing number of connected Internet of Things (IoT) devices producing event-related video.

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.



## The Solution

When combined with SAN storage like the Exos X 5U84, **Nx Witness VMS** makes it possible to scale an IP surveillance solution to virtually any size. The combined solution is all about one thing: guaranteeing you never lose your video and its associated metadata.

**Nx Witness's** combined solution with Seagate enables a multi-level approach to video surveillance, with the ability to deploy edge server devices with minimal active storage (i.e., seven days) that can be configured to replicate in real-time or back-up mission critical video and events to a centralized storage area network composed of high density, high availability Seagate devices.

The flexibility **Nx Witness VMS** brings to capturing, monitoring, and analyzing video pairs perfectly with Seagate's ability to expand the storage capabilities of a system and guarantee your video is available when you need it, wherever you are.

**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 future hiccups. 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

Notes:

- Based on 10TB drives
- Rebuild times assume rebuild 1/0 (RW) at 50MB/s per drive
- Rebuild time may vary based on system workload at the time of rebuilding.
- Read performance impact under failure assumes no rebuild I/O

### 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%	-62%	-14%	-10%

\*10TB Drives, Rebuild times assume rebuild I/O (RW) at 50MB/s per drive. Read performance impact under failure assumes no rebuild I/O

**Powered by NX** products—like Nx Witness VMS—are created using Nx Meta, an open, extensible IP video surveillance platform. With Nx Meta, companies can create market tailored VSaaS (video surveillance as a solution) products that integrate seamlessly with their own hardware and software solutions to generate recurring revenue.

Nx Witness VMS is a powerful, easy to use video management system for surveillance and production monitoring around the world.

To learn more about Network Optix (Nx) please visit <https://networkoptix.com>

## 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. This solution supports 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 recorded videos from a distributed implementation allows for data protection and the ability to grow when you need to.

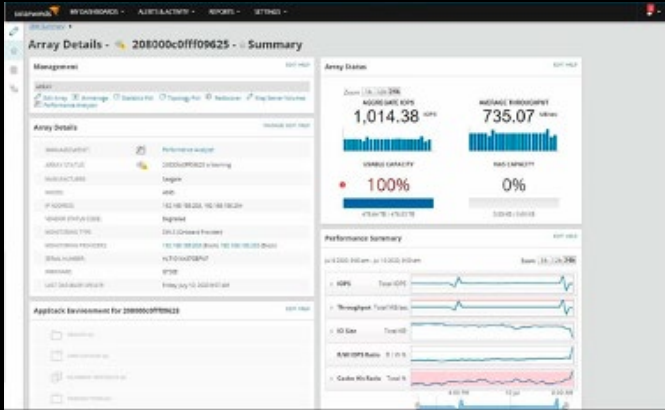
## Features & Benefits

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 their 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 help keep your data safe—even if your drives are lost, stolen, or misplaced.

# Solutions Components & Joint Architecture

1000 FHD Cameras

- An average CPU usage (4x vCPUs) per server of 43%
- An average throughput of 735 Mbps
- 0.001% dropped frames (99.999% successful frame capture)



Name	Type	IP	Recording	Status	Event Count	Event Stream	Resolution	Frame/s
TestCamera01	Camera	172.16.1.101	On	Recording	0	0	1080x1080	30
TestCamera02	Camera	172.16.1.102	On	Recording	0	0	1080x1080	30
TestCamera03	Camera	172.16.1.103	On	Recording	0	0	1080x1080	30
TestCamera04	Camera	172.16.1.104	On	Recording	0	0	1080x1080	30
TestCamera05	Camera	172.16.1.105	On	Recording	0	0	1080x1080	30
TestCamera06	Camera	172.16.1.106	On	Recording	0	0	1080x1080	30
TestCamera07	Camera	172.16.1.107	On	Recording	0	0	1080x1080	30
TestCamera08	Camera	172.16.1.108	On	Recording	0	0	1080x1080	30
TestCamera09	Camera	172.16.1.109	On	Recording	0	0	1080x1080	30
TestCamera10	Camera	172.16.1.110	On	Recording	0	0	1080x1080	30
TestCamera11	Camera	172.16.1.111	On	Recording	0	0	1080x1080	30
TestCamera12	Camera	172.16.1.112	On	Recording	0	0	1080x1080	30
TestCamera13	Camera	172.16.1.113	On	Recording	0	0	1080x1080	30
TestCamera14	Camera	172.16.1.114	On	Recording	0	0	1080x1080	30
TestCamera15	Camera	172.16.1.115	On	Recording	0	0	1080x1080	30
TestCamera16	Camera	172.16.1.116	On	Recording	0	0	1080x1080	30
TestCamera17	Camera	172.16.1.117	On	Recording	0	0	1080x1080	30
TestCamera18	Camera	172.16.1.118	On	Recording	0	0	1080x1080	30
TestCamera19	Camera	172.16.1.119	On	Recording	0	0	1080x1080	30
TestCamera20	Camera	172.16.1.120	On	Recording	0	0	1080x1080	30

## Conclusion

Seagate and Network Optix have the right solution to satisfy your video surveillance needs—from small businesses to commercial applications with 500 cameras, to large enterprises that require up to 1000 cameras. 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 NxWitness VMS deployment.

## About Network Optix

Network Optix is a software development company focused on one thing: making intelligent, scalable, enterprise-ready IP video management solutions that are instantly usable and can be customized to adapt to any potential use case.

Ready to Learn More?

Visit us at [www.seagate.com](http://www.seagate.com)

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