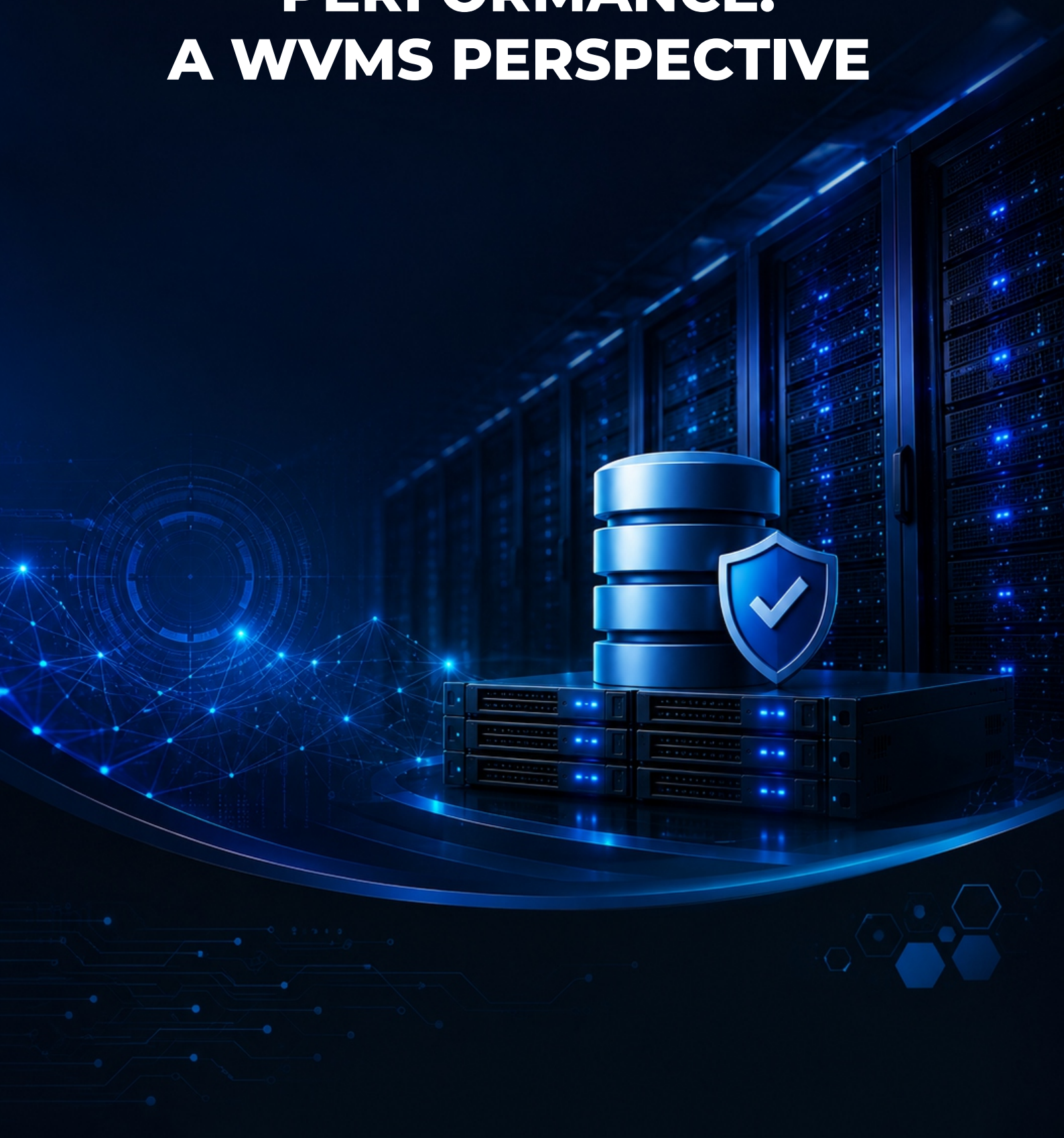




DESIGNING STORAGE FOR PERFORMANCE: A WVMS PERSPECTIVE

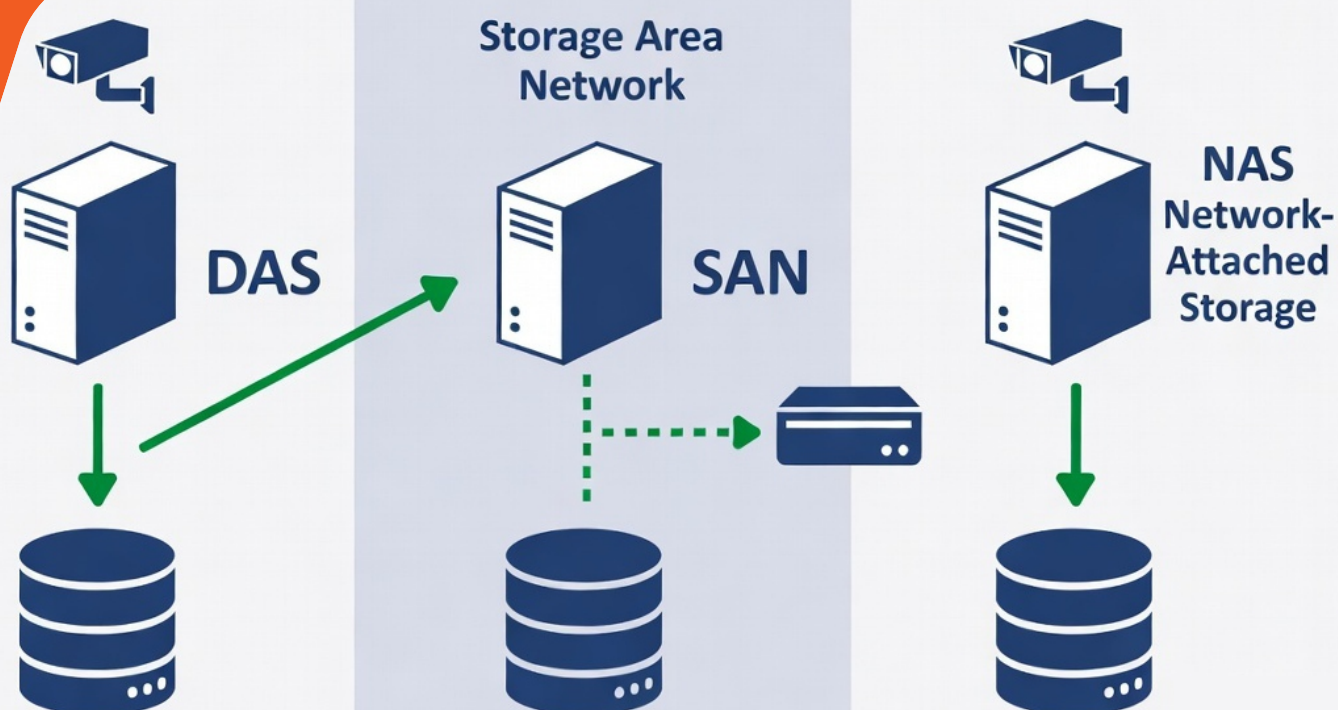


Designing Storage for Performance: A WVMS Perspective

By Wavesys Global

In any video surveillance ecosystem, storage is not just a backend component—it is the backbone that determines how reliably your system performs. Within WVMS (Wavesys Video Management System) environments, storage decisions directly affect recording continuity, system responsiveness, and long-term data integrity.

As organizations move toward higher resolutions, AI-driven analytics, and longer retention requirements, storage planning becomes a strategic necessity rather than a technical afterthought.



Understanding Your Storage Options

WVMS deployments typically revolve around three storage architectures:

- Direct-Attached Storage (DAS)
- Storage Area Networks (SAN)
- Network-Attached Storage (NAS)

Each model serves a different operational purpose. The right choice depends on how your system scales, how critical uptime is, and how data is accessed across your infrastructure.

DAS: Focused Power for Dedicated Systems

DAS connects storage directly to a recording server, eliminating network dependencies. In WVMS deployments, this translates into predictable performance and faster data handling.

Why DAS Works Well

- Minimal latency due to direct connection
- Strong performance for continuous video writes
- Lower setup and infrastructure costs
- Straightforward deployment

Where It Falls Short

- Expansion requires additional hardware
- Not suitable for shared or distributed environments
- Server dependency introduces a single point of failure

RAID in DAS: Building Reliability into Performance

To make DAS production-ready for WVMS, RAID configurations are essential.

Where It Falls Short

- Protection against disk failures
- Improved read/write efficiency
- Flexibility across different performance and redundancy needs



WVMS Best Practices:

- Use RAID 6 with hot spare drives for lanced performance and safety
- Prefer dedicated hardware RAID controllers
- Optimize cache settings to prioritize write operations

Where It Falls Short

High-throughput recording servers handling dense camera deployments.

JBOD: Simple, but Risk-Prone

JBOD setups treat each disk independently, offering maximum usable capacity but no redundancy.

When It Makes Sense:

- Budget-constrained environments
- Non-critical data storage

WVMS Note:

While WVMS can distribute workloads across disks, JBOD should only be used with caution due to the higher probability of data loss.

SAN: Centralized Strength for Large Deployments

SAN is designed for environments where multiple servers need access to a unified storage pool with minimal latency between Wavesys and the target system.

Key Advantages

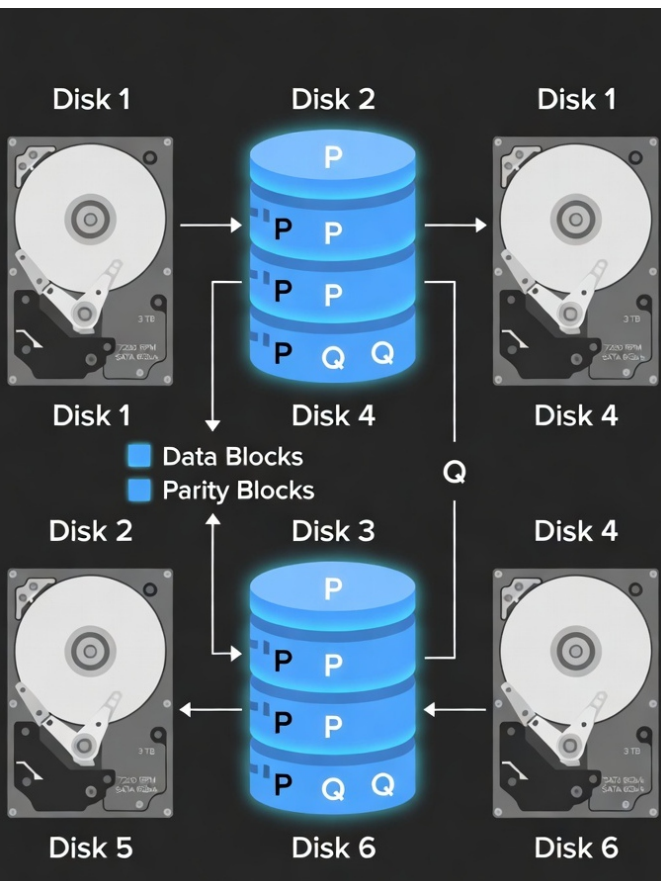
- High availability with built-in redundancy
- Scales efficiently with growing infrastructure
- Supports mission-critical operations

Trade-Offs

- Higher capital and operational costs
- Requires specialized configuration and maintenance
- Dependent on robust network design

Ideal For:

Enterprise WVMS installations where downtime is not an option.



NAS: Practical and Scalable for Mid-Sized Systems

NAS provides shared storage over standard networks, making it a flexible option for growing WVMS deployments.

Strengths

- Easy to deploy and manage
- Cost-effective for moderate workloads
- Enables shared and remote access

Limitations

- Performance tied to network conditions
- Can struggle under heavy, continuous write loads
- Not ideal for high-density recording environments

Best Fit:

Small to medium WVMS setups, backup storage, or secondary archives.

Why Storage Planning Matters More Than You Think

In WVMS environments, storage limitations don't just slow systems down—they create real operational risks:

- Missing video frames
- Incomplete recordings
- Gaps in critical footage

These issues are typically the result of storage systems being unable to sustain required data throughput during peak activity.

Bottom line: storage must be designed around real workload behavior, not just theoretical specs.

How to Estimate Your Requirements

Throughput Example

If your system runs:

- 20 cameras at 8 Mbps

You need approximately:

- 20 MB/s sustained write performance

Capacity Example

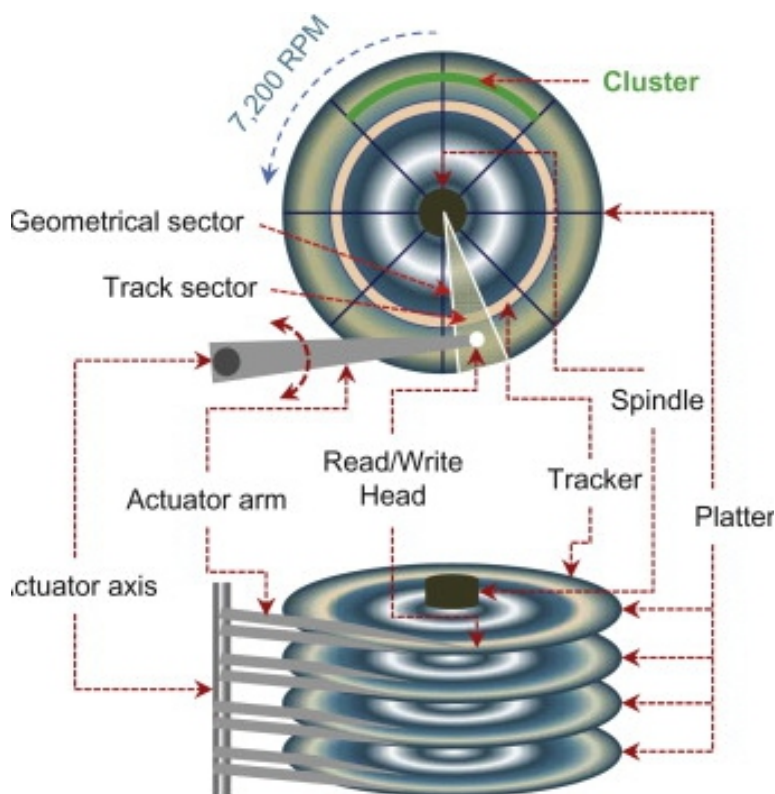
For:

- 30 cameras
- 30-day retention
- 6 Mbps bitrate

You will need roughly:

- ~57 TB of storage capacity

Redundancy (RAID) should always be factored into final sizing.



Practical Guidelines for WVMS Storage Design

- Design for peak load, not average usage
- Always incorporate redundancy mechanisms
- Choose systems that can scale with your surveillance footprint
- Validate performance with real-world testing before deployment

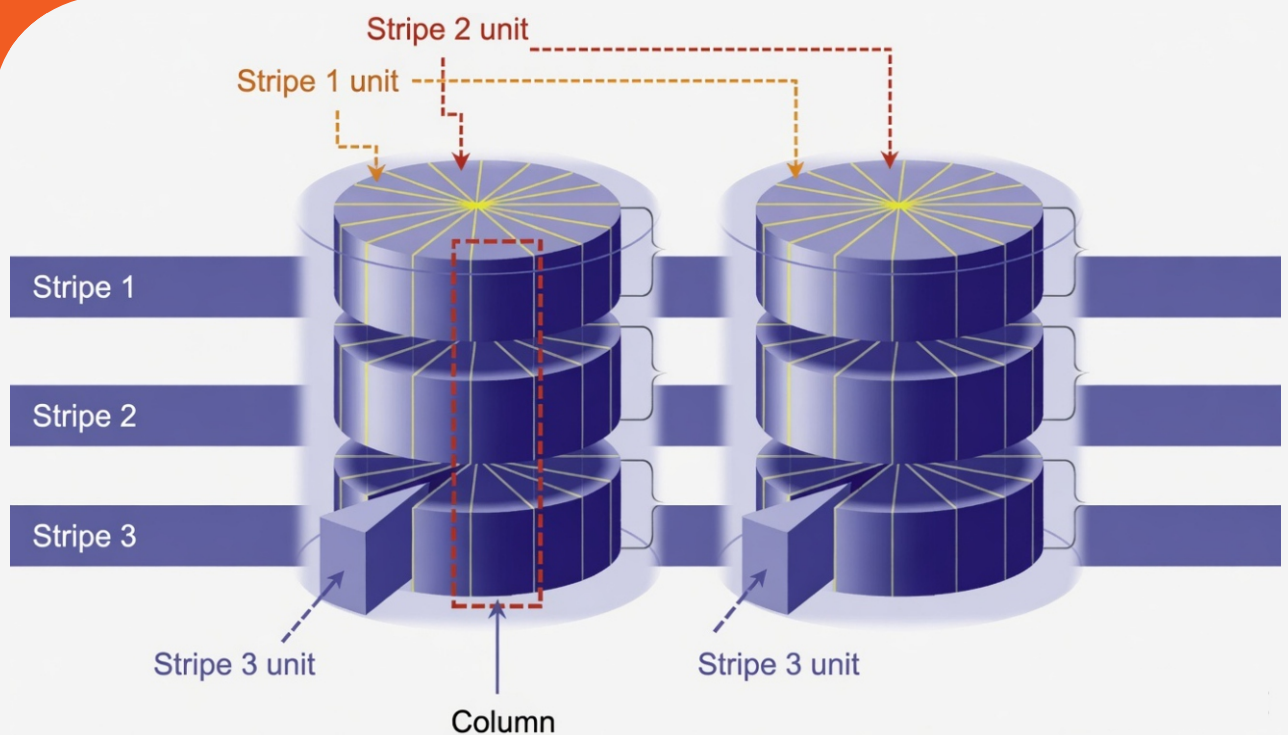
At-a-Glance Comparison

Criteria	DAS	SAN	NAS
Performance	Very High	Very High	Moderate
Cost	Low	High	Moderate
Scalability	Limited	Extensive	Moderate
Complexity	Low	High	Low
Best Use Case	Dedicated recording	Enterprise infrastructure	Mid-sized deployments

Closing Thoughts

A well-architected storage strategy is fundamental to getting the best out of WVMS. The right choice isn't about picking the most advanced technology—it's about aligning infrastructure with operational needs.

When storage is planned correctly, WVMS delivers what it is designed for: consistent performance, reliable recording, and complete data confidence. On requirements, storage planning becomes a strategic necessity rather than a technical afterthought.



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